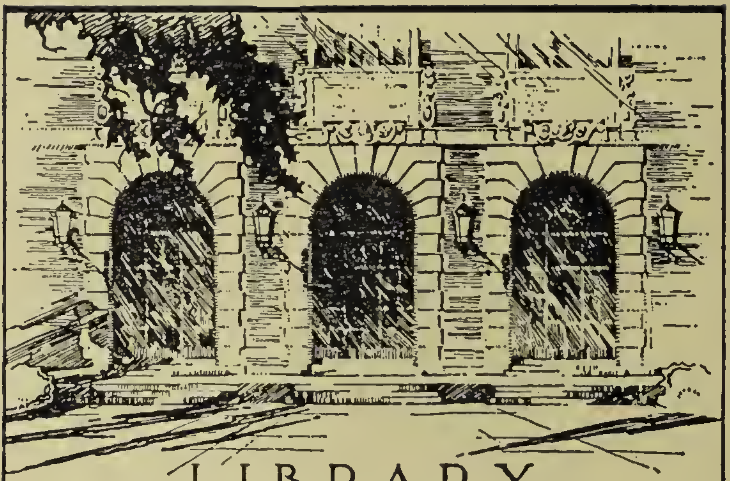

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JUN 1 5 2006

PROCEEDINGS

OF THE

ILLINOIS STATE

DAIRYMEN'S ASSOCIATION,

AT ITS

FIRST ANNUAL MEETING,

HELD AT THE

CITY OF ELGIN, ILLINOIS,

December 30 and 31, 1874,

WITH

CONSTITUTION AND BY-LAWS OF THE ASSOCIATION.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

ELGIN, ILL.
ADVOCATE BOOK AND JOB PRINTING ESTABLISHMENT.
1875.

AGRICULTURAL
EXPERIMENT STATION
JAN 1896
UNIVERSITY OF ILLINOIS.

OFFICERS OF THE ASSOCIATION FOR 1875.

PRESIDENT.

John R. McLean, Elgin, Ill.

VICE-PRESIDENTS.

Wm. H. Stewart, McHenry County.
Wm. F. Osgood, St. Charles.
I. H. Wanzer, Elgin, Ill.
J. Reynolds, Will County.
G. D. Henning, Kendall County.
Lewis Stewart, Plano, Kendall Co.
D. Seavey, LaSalle County.
L. M. Brown, Lake County.
C. W. Gould, Cook County.
C. C. Buel, Whiteside County.
M. H. Durham, Boone County.

SECRETARY.

M. H. Thompson, Elgin, Ill.

TREASURER.

H. W. Mead, McHenry County.

a. D. 1846

LIST OF MEMBERS

OF THE

ILLINOIS STATE DAIRYMEN'S ASSOCIATION FOR 1875.

Bartlett, Luther, Bartlett's Sta.
Boise & Son, I., Marengo.
Briggs, O. M., McHenry County.
Gould, C. W., Elgin.
Goodrich, J. P., Dixon.
Hawks, Moses, Washington Heights.
Johnson, D., Elgin.
Kingsley, S. W., Dundee.
Larkin, C. H., Elgin.
Morrow, G. E., Chicago.
McLean, J. R., Elgin.
Mead, H. W., Hebron.
Moon, G., Elgin.
Prichard, R. M., Waterman Sta.
Panton, Wm., Clintonville.
Stone, R. R., Elgin.
Seavey, D., LaSalle County.
Seymour, J. W., Elgin.
Seward, E. H., Marengo.
Stewart, R. W., Hebron.
Tefft, Dr. J., Elgin.
Thompson, M. H., Elgin.
Thompson, Ahira, Harmony.
Thompson, T. J., Burlington.
Todd, Hugh, Elgin.
Turner, C. M., Danville, Iowa.
Wright, F. W., Elgin.
Wright, E.,
Wilcox, S., Elgin.
Wanzer, I. H., Elgin.

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ILLINOIS STATE DAIRYMEN'S ASSOCIATION.

ORGANIZATION.

In accordance with a resolution passed at the Northwestern Dairymen's Association at Woodstock, a meeting of dairymen was held at Aurora, March 3d, 1874, to organize a State Association. The minutes of that meeting are taken from the files of THE ELGIN ADVOCATE:

A temporary organization was effected, and D. F. Barclay, of Elgin, H. W. Mead, of Hebron, and D. G. Eldridge, of Eola, were appointed a committee to draft Constitution and By-Laws, and D. G. Eldridge, of Eola, G. D. Henning, of Plano, I. H. Wanzer, of Elgin, H. W. Mead, of Hebron, and D. Volintine, of Aurora, a committee on nomination of officers.

In the afternoon the committee on Constitution, through D. F. Barclay, presented the following, which was adopted by sections:

SECTION 1. This Association shall be known as the Illinois State Dairymen's Association.

SEC. 2. The officers of this Association shall consist of a President, one Vice-President from every county in the State represented in the dairy interest, a Secretary and a Treasurer.

SEC. 3. The officers of this Association shall be elected by acclamation at the annual meeting, to be held on the second Thursday in December in each year, having been previously nominated by a committee appointed for that purpose.

SEC. 4. The place and time of meeting shall be designated at each previous meeting.

SEC. 5. The objects of this Association shall be the encouragement of the dairy interests in our State, with mutual improvement as relates to dairy interests in manufacturing and marketing the product of our dairies.

SEC. 6. Persons may become members of this Association by the payment of an annual fee of $1.00.

SEC. 7. The officers of this Association shall constitute an Executive Board, for the transaction of business.

SEC. 8. The Constitution of this Association may be altered at any regular meeting of the Association, on giving notice at the previous meeting of such intention.

The committee on nomination of officers reported the following, who were declared elected:

The committee offered the following nominations:

For President, J. R. McLean, of Kane county; Vice-Presidents, W. F. Osgood, Kane; W. H. Stewart, McHenry; D. Dunham, DuPage; Joseph Reynolds, Will; G. D. Henning, Kendall; D. Seavey, LaSalle; John Clark, DeKalb; L. W. Brown, Lake; C. W. Gould, Cook; Mr. Buel, Winnebago, and B. Cornell, Boone. For Secretary, D. G. Eldridge, Eola, and for Treasurer, H. W. Mead, Hebron.

On motion it was decided that the annual meeting be held on the second Thursday in December of each year.

Dr. Stone then moved that the next meeting be held in Elgin on the first Tuesday in September, which Mr. Eldridge amended by substituting Aurora for Elgin, and the motion as amended was carried.

On motion of Mr. Barclay, the Secretary was instructed to notify the Vice-Presidents of their election.

On motion of Dr. Stone, the Executive Board was instructed to furnish, previous to next meeting, a programme of the order of business.

The Association then adjourned.

SEPTEMBER MEETING.

The meeting to take place on the first Tuesday of September, 1874, pursuant to adjournment, failed for lack of attendance, there being but three or four present. It was adjourned to Wednesday, December 30th, 1874, and to be held in Elgin.

FIRST ANNUAL MEETING,

At Elgin, Dec. 30, 1874.

The President called the meeting to order at 1:30 p. m. on Wednesday, December 30th, 1874, and introduced Judge Wilcox, of Elgin, who, on behalf of the Association, delivered the following address of welcome:

ADDRESS OF WELCOME BY JUDGE WILCOX.

Mr. President and Gentlemen of the Convention:

It is a common remark that one might as well be out of the world as out of the fashion. Now it certainly is in the fashion to have some resident of the place at which a convention of the kind here convened meets, as the first proceeding, address a few words of welcome to the members. Perhaps it may be thought that I on this occasion appear before you to utter words of welcome merely to attest the loyalty of the managers of the Convention to this fashion of the times. I do not recognize much truth in this common remark, but think there is often more good sense shown in disregarding fashion than following it; still in this instance the custom may properly be followed, and expressions of welcome on behalf of the citizens of the city of Elgin to the members of this Convention be uttered in perfect sincerity. There are substantial reasons why the people of this city are pleased to see you here. They are pecuniarily interested in the branch of industry which it is the object of this Convention to promote. About one hundred teams—some fine ones—with the milk of a like number of dairies of this vicinity, daily traverse the streets of Elgin, some going to the Illinois Condensing Company's Factory, others to the Elgin Butter Company's Factory, and still others to the railroad depots. About 2,000,000 gallons of milk last year thus found market here, bringing to the dairymen something over $200,000 in monthly payments. Much of this money immediately came to the merchants, mechanics, millers, and others in the city. The cheese and butter manufactured from the milk found weekly ready sale at remunerative prices at the Board of Trade here. A large trade in milk cans, strainers, cheese vats, cheese boxes, and the various other articles used in the dairy and in making cheese and butter, is now centered and established in Elgin. These facts obviously demonstrate that whatever affects injuriously or beneficially the dairy interest of this vicinity, affects in like manner to some extent the entire business of the city.

Entertaining the belief that from the addresses delivered and the discussions and interchange of experience which will take place during the session of the Convention, the dairy business will derive advantage, and thereby in a degree the general interest of the city promoted, our people of course sympathize in the purpose of the Convention, and therefore greet you cordially, and I feel sure that I may extend to you on their behalf a sincere welcome to Elgin.

The President then delivered his address, as follows:

ADDRESS OF PRESIDENT J. R. McLEAN.

Mr. President and Gentlemen of the Illinois State Dairymen's Association:

I am highly gratified in meeting you in this our first regular Convention, and I hope that this session may be of deep interest to all in attendance. The programme before us embraces interesting and important topics for our discussion. Some of them, if properly discussed, cannot fail to be of great value to dairymen in the future. I have no doubt that the attainments reached and progress made in the dairy interest are mainly due to the association of dairymen, where all subjects connected with this branch of industry have been discussed more or less, and the experience and observation of many practical dairymen have been exchanged with mutual benefit. The pioneers in dairying will assent to this fact more readily than those that have engaged in the business at a later period. I am confident the dairy business in this State would never have reached the magnitude and immense wealth (financially speaking) that it has added to our resources, also the well earned reputation of our dairy products both at home and abroad, had the association of dairymen been overlooked. If the above be true, and who will doubt it, should not the dairymen in this vicinity be honored and respected for their early efforts and success in organizing the first dairymen's association west of the State of New York.

This organization was perfected in this city August 13th, 1863, with twenty-six members. And from this small beginning the dairy business received an impetus that has made it a "power" in our State, as the Secretary of the State Agricultural Society is pleased to term it when speaking of the dairy interest in this State. And yet in view of these facts there are some among us ready to ask, Can any good result from this State Association? I answer yes, emphatically, but have not the time or space to give my particular reasons in this paper, as there are other matters of more importance that demand our attention.

It will be profitable for us to look over the transactions of the year just closing and learn the results of our labor, and compare the business of the present with former years, and ascertain if we can the prospects of the coming year for our dairy products, and in order that we may have a correct comparison, I here give the price of butter and cheese on Board of Trade the first sale day of each month in 1873 and 1874, to wit:

	CHEESE.		BUTTER.	
	1873	1874	1873	1874
April 8th	13@14	13@14	36½	35@41
May 6th	12	15@15½	36½	36
June 3d	11¼	12@12¼	28	35
July 1st	9@9½	11½@11⅝	None.	30
August 8th	11¾@12	11¾@19⅝	"	None.
September 2d	11½@12⅛	11¾@12⅛	"	"
October 7th	12	12½@14½	"	"
November 4th	12@12⅛	14@14½	"	"
December 2d	12½@12⅜	14	40	40

The price of milk being the same for the summer months and a half a cent per gallon better this winter than last year.

You will perceive from the above that the latter year has been more prosperous than the former, notwithstanding the severe drouth of the latter part of summer and early autumn months that lessened the quantity of milk fully twenty per cent. This shrinkage of milk was the cause of an early advance in both butter and cheese, and this advance has continued to the close of the season, and has been very satisfactory to the manufacturers, while the producers of milk received no advance, consequently their balance sheet shows a deficit in proportion to the shortage in milk. I would here remark that simple justice demands that in future contracts made for milk, either at factories or with the milk venders, they should be so conditioned on a sliding scale that their interests will be identical and equal.

We are pleased to learn that the demand for both butter and cheese for home consumption and foreign shipment is very satisfactory, and that the make of this season is superior and of a higher grade than any former year. More particularly is this true in reference to the factory butter, and I may also add that private dairies are making equal advance in line of improvement, all of which have found a good market and quick sales at fair prices; consequently there are no heavy stocks in first hands to carry over to the spring trade; in fact I may say that this portion of the State is quite bare of cheese, and no accumulation of butter on hand compared with former years.

I am pleased with the wisdom and foresight of factorymen in the disposal of their goods at an early day, thereby avoiding any risks and loss in shrinkage. The advantage of this course is obvious to all. In former years the reverse of this plan has prevailed in holding much of the fall make for winter prices. The result of this course found many with heavy stocks on hand, which had a tendency to depress prices and lessen the consumption and overload the spring trade with an inferior article at heavy loss to the manufacturer and general depression of the market. Such a state of things now exists in the State of New York. The Utica *Herald* of December 15th says, "during the last week there has some late-made cheese gone forward on commission. The long lines, of which there are several in this and Herkimer counties, are still resolutely held above the current market, with some talk of storing for sale in February. And speaking of butter it says: We are informed that in the southern part of Chenango county hardly a tenth of the season's make has gone forward, and the farmers have scarcely money enough to pay their taxes. Certainly there are great quantities now in the hands of butter makers, and this causes solicitude. We are quite of the opinion that holding butter has proceeded too far and unwisely." I am of the opinion the above state of things does not exist in this State, nor will they ever exist as long as the Elgin Board of Trade is made the great *clearing house* of dairy products. This Board has been of great value to the dairymen of this State in the disposal of their products, and should be sustained by all our dairymen as well as those who transact business on its Board. I would here suggest to the producers of milk, if they would adopt the method of selling their milk on Boards, the same as other dairy products, they would have the benefit of competiton among buyers. This could be done by fixing on a certain day in the spring and fall for the sale of milk. I hope this thought will be discussed at this or some future meeting.

In conclusion, gentlemen, allow me to congratulate you on the progress made during the year towards a state of perfection in the manufacture of butter and cheese and the bright prospect before you for the coming year.

D. F. Barclay, of Elgin, delivered an address as follows on " The Past and Future of the Dairy Interests of Elgin."

ADDRESS OF D. F. BARCLAY.

Mr. President and Gentlemen of the Illinois Dairy Association:

By perusing the past history of the dairy interest of our State, and analyzing if possible the causes that have brought about the present prosperous condition of this important branch of husbandry, we can best judge of what its future may be. Only twenty years have passed since the first can of milk was shipped to Chicago, but in those twenty years a complete revolution has been wrought in the agriculture of the northern portion of our State.

In the early settlement of the country the attention of the farmer was entirely devoted to grain raising. Wheat was cash and the only product of the farm that could be sold for money, and well did the virgin soil of Illinois repay the pioneer. Abundant crops rewarded him for his labor, and although the price was low, because of the very abundance, the early settler was enabled to pay for his farm and looked forward to better times and better prices in the future. But constant cropping with grain began to tell upon the soil, and as time passed the crops became lighter each succeeding year, while it became apparent that raising wheat did not pay, and many began to believe that farming in Northern Illinois did not and never would pay.

During all this time up to 1854, but little attention had been paid to the dairy or its products. Butter making was one of the household duties of the farmer's family, to supply their own wants, and the excess was exchanged at the store for what was termed store pay. Having generally but very few conveniences for properly caring for the milk, and as the storekeeper paid a uniform price for butter regardless of quality, there was but little inducement held out to the butter maker to provide better accommodations for the dairy or take greater pains to make a superior article.

This state of things brought to the country store butter of every hue and variety; was packed by the country merchant and shipped East and sold as Western butter.

Thus the character of the Western dairy products was established—the name Western indicating a very inferior grade in the Eastern markets—and it has taken much of patience and perseverance on the part of the Illinois dairymen to remove the impression from the minds of Eastern dealers, that Illinois could not produce butter and cheese equal to that of the Eastern States.

In the year '54 the prospects of the farmers of Northern Illinois was gloomy indeed. Grain raising was unprofitable, and farmers asked each other the question, What shall we do? Many endeavored to solve the problem by selling out and going farther West, realizing for their farms hardly the cost of their improvements. About this time P. H. Smith, occupying the farm then and still owned by Dr. Joseph Tefft, two miles east of Elgin, conceived the idea of shipping milk to Chicago. He bought a few cows and began sending milk to the old City Hotel. This was the first attempt at exclusive dairy farming in Illinois. Chicago had been shocked by an expose in the newspapers of the manner in which the city was furnished with milk—termed swill-milk—produced from cows fed and kept in the distilleries and breweries, and eagerly accepted the sweet, wholesome milk from the Fox River Valley. Mr. Smith added rapidly to his dairy, but the demand exceeded his ability to supply; so his neighbors, seeing the condition of things, began shipping milk in the same way, and for the next ten years farm after farm was stocked with cows until the supply exceeded the demand and prices began to recede to so low a point that it became apparent that something had to be done or the dairy business would also become unprofitable, and the question was, what can be done with the excess of milk? It seemed useless to make it up into butter or cheese. The miserable reputation Western dairy products had earned in the East and even at home, precluded any idea of profit from that source. But despite this unfavorable prospect, there were a few men who believed that Illinois could produce as good an article of butter and cheese as any of the most favored of the Eastern States, and they determined to make the trial.

In 1863, C. W. Gould and I. H. Wanzer put up each a small factory in the vicinity of Elgin, and succeeded so well that in the next four years many more factories were started. These early cheese-makers spared no pains and considered no effort too great to so thoroughly acquaint themselves with the business that they might be able to produce an article, the excellence of which could not be questioned in any market, and they were always ready to impart to the new beginners all the knowledge they had obtained. As factories began to multiply conventions were held, that the manufacture of cheese and the preparation of the milk and the care of the dairy might be discussed, and the experience and experiments of each might be made beneficial to the whole.

These efforts to build up the character of the dairy products of the West at last won success. It was discovered that the commission houses of Chicago, to whom the largest portion of the cheese was consigned, had begun to brand and sell them as New York Factory cheese. But while the dairymen no doubt felt flattered by this favorable opinion of their product expressed in this unequivocal manner by those excellent judges, the Chicago dealers, they could not see, if their cheese was good enough to be classed as New York Factory, why they should not receive as good a price as the New York producer. The great point however was gained which the Western cheese maker had been seeking to obtain—the recognized excellence of the Western product. That being avowed the price in market would soon be regulated.

The factory system proving so successful, new factories were erected on every hand. Wisconsin, Iowa, Minnesota, and all the Western States, profiting by our experience, engaged in it more or less extensively, and to such vast proportions has this dairy business attained, that many fear that as in the case of shipping milk to Chicago, the supply will soon exceed the demand. Every year the question is asked, What will be done with the enormous amount of cheese that will be put upon the market, and every year thus far the question has been answered by an advance in price and an increased demand.

The cause of this increased consumption is manifest. While the dairymen have been endeavoring to produce a superior article, the consumer seems to have appreciated their effort, and instead of the pungent old cheese of former years being used merely as a condiment, now rich and nutritious cheese is becoming a staple article of food; cheaper and more nourishing than meats; requiring no preparation for the table, and capable of transportation to any climate. The densely populated countries of Europe are becoming aware of its value, and in order to avail themselves of the condensed richness of our Western prairies, we find them buyers upon our local dairy Boards of Trade, and the Western dairyman looks up the Liverpool quotations before making a sale of his cheese.

While Europe has thus become a customer, steam and the telegraph are bringing the teeming millions of Asia commercially within our reach, and the time is not far distant when the energetic Anglo Saxon element will penetrate and dominate in those same civilized countries, carrying with them and impressing upon the peoples of those countries their habits and tastes, opening new markets for the luxuries and necessaries of a higher civilization. With this almost limitless prospect of demand, what is the future source of supply? Dairying can be profitably pursued in a limited territory. A belt of country not much over two hundred miles in width crossing our continent from east to west, constitutes the dairy area of America, and upon this temperate zone must devolve the business of producing the vast amount of dairy products required, and it seems as though the problem for the consumer would be, How can the supply be kept up? rather than for us to inquire, How can a market be found?

In this favored dairy region there need not be dreaded the exhaustion of the soil as in the earlier years of grain raising. The dairy carries with it its own fertilizers, and year by year the soil increases in productiveness as its fortunate owner increases in riches, and with the gold of the world pouring into its coffers, and God's sunshine and shower descending upon it, the hearts of its people will be glad, for they shall live in a land flowing with milk and honey.

The Secretary of the Elgin Dairymen's Club then read the following letter from the Secretary of the Illinois State Board of Agriculture:

STATE BOARD OF AGRICULTURE,
SECRETARY'S OFFICE,
SPRINGFIELD, December 19th, 1874.

To J. R. McLean, Esq.:

DEAR SIR:—Cannot something be done to secure the co-operation of dairymen of this and adjoining States in making an exhibition of their products at our State Fairs somewhat commensurate with the magnitude of the interests involved? Large premiums are annually offered for cheese, butter, and for cows with good milking properties; but the response has been far from encouraging. What is wrong? and, Where is the remedy?

If you think best, please bring this matter before the State Dairymen's Association at its meeting this month, and let me hear from you. The State Board of Agriculture will meet January 12th, and any suggestions you may make will be laid before said Board by—

Very truly yours,
A. M. GARLAND, Secretary.

The communication was referred to the following Committee: Geo. E. Morrow, Dr. Stone, I. H. Wanzer, Lewis Stewart and I. Boise.

The first subject for discussion was, "The Supply and Demand of Dairy Products, and their Prospective Markets," which was opened by D. G. Eldredge, of DuPage county, Secretary of the Association, who said that during the past twenty years the increase of milch cows had been about two per cent. on the increase of the inhabitants, and in the same time dairy products have more than doubled. The same cannot be said of any other farm products, and perhaps of no other manufactured article.

Dr. Tefft, of Elgin, had also been assigned to that topic, and read the following paper:

Mr. President and Gentlemen of the Illinois Dairymen's Association:

Allow me to invite your attention for a few moments while I offer you some desultory thoughts or remarks upon "The Supply and Demand of Dairy Products and their Prospective Markets."

In order to do this allow me to digress a little and raise a leaf in the book of time and compare the old method of making butter and cheese thirty or forty years ago by our forefathers and foremothers of that day, with the shallow tin pan and vegetable cellar for a creamery for butter, and the wash-tub, cheese-tongs basket, and corner-of-the-fence press for cheese, with that of to-day, under the factory system.

At that time the supply was usually furnished by a few farmers with a dairy of ten, fifteen, or twenty, and sometimes, but rarely, thirty or forty cows. This last was considered a very large dairy and was not often met with. The butter and cheese produced by these farmers who entered into this branch of farming, as it was then called, was in butter, limited to a small amount, and in cheese to one per day or one every second or third day, consequently the supply was small.

In these days cheese was not eat as a food but used as a relish, and the tinniest morsel was sufficient to supply the family for a meal. Europe had not turned her attention to this country for this article of food, and John Bull could not be induced at this early date to believe that this country could manufacture anything fit for an English aristocrat to eat. Mark what he says now, "The American cheese, under the factory system of manufacturing, *is fully equal if not superior to the best English make.*" This saying is fully verified by the English demand on this country for our factory cheese of late. Cheese manufactured in or about 1840 was worth on the market about five, and sometimes, but rarely, brought six or seven cents per pound, and a good wagon load was sufficient to glut an ordinary market. In the year above named the entire dairy interest of milk, butter and cheese in the United States (as per U. S. Census) amounted to about $33,784,008.

Somewhere between 1840–50, the Herkimer county dealers commenced shipping cheese to Europe, and in the years of 1848–9, 15,386,836 pounds were exported.

We pass, for the purpose of cutting short this article, from 1849 to that of 1873, although the exports of dairy products during those many years would show a large and steady increase from year to year.

The exportation of butter in 1873 was	3,593,884	pounds.
" " " " " 1874 "	4,671,674	"
Increase of 1874 over that of 1873 of	1,077,790	"
The exportation of cheese in 1873 was	87,845,769	"
" " " " " 1874 "	94,217,466	"
Increase of 1874 over that of 1873	6,317,697	"

The population of the United States and Territories in 1870 was 38,558,371. Now allowing the increase to be the same per year as it has been for the ten preceding years, it would aggregate in 1874, 41,404,391 souls. Now allow three pounds of cheese to each individual, (which is the estimated amount consumed in the United States,) and we have disposed of 124,213,173 pounds of cheese here at home. Add this to the amount exported this year, and we have comparatively a good estimate of the amount of cheese disposed of in 1874, which according to our figures amounts to 218,430,639 pounds.

Should England increase her demand another year in the same proportion as she has for the year just closing, and should the United States increase its population and demand in the same proportion as for a year past, we should need to manufacture 226,882,851 pounds of cheese to supply the demands for 1875.

Prior to 1872 cheese manufactured in this vicinity was either sold at the factory or sent forward to commission men for sale, who after selling deducted their commission and sent the balance if any to the factory men, whose net receipts ranged all the way from four to seven or eight cents per pound. About this time a little incident occurred in the way of marketing cheese which illustrates pretty well the commission business. Perhaps it may be familiar to you all. Nevertheless it tells so well it may not be amiss to relate it here. It tells something like this:

Some few years ago our friend owned or operated a cheese factory and made a certain amount of cheese which he sent to a commission merchant not a thousand miles distant to sell on commission. After a time he sent, requesting a remittance, but to his surprise received a letter stating his cheese was so dry and chippy it had to be sold for little more than the commission. Well, our friend being busy and not hard pressed for money, laid the letter by and gave it no further attention for a few weeks, when he again addressed the firm requesting a settlement. This time he received an answer stating his cheese was so soft that the whey run out and half way across the floor of the house, and consequently the cheese had to be sold for little more than the commission. He took his two letters, visited the parties, and adjusted the matter.

We trust an occurrence like the above does not often happen, for we firmly believe that all commission men are not so forgetful as to be thus caught.

About three years ago many of the dairymen in this vicinity met and organized a Board of Trade for the sale of dairy products manufactured in the vicinity. Although this Board has been in operation for nearly three years, cheese has never been sold on it for less than eight cents or more than fifteen cents per pound, if my memory serves me, and butter has brought from thirty to forty-five cents.

In 1851 Mr. Jesse Williams, of Rome, New York, adopted the cheese-vat and inaugurated the associated system of manufacturing milk into cheese by receiving milk from the farm of one of his sons, which together with that of his own dairy he made into cheese at his own dairy rooms. Here then was conceived this first great idea of cheese making by the associated or factory system, and the Yankee mind, which is not slow to profit by an idea advanced where it has good reason to believe that the mortal dollar is at the best end, took up the cue and carried forward the same to the present factory system.

The number of cheese factories in the United States in 1870 was 1,313. the average amount of cheese made by each 83,347 pounds, aggregating 109,435,229 pounds. Private dairies made, in 1870, 53,492,153 pounds of cheese. In 1875 private dairies will make but very little cheese, consequently it will require 3,263 cheese factories with a capacity of about 85,000 pounds each to supply the demands for cheese in 1875, other things being equal.

Now, in taking a prospective view of this whole matter, we see no good reason for believing that the price of dairy products will decline in 1875 from that paid for the last few years, unless it may be in consequence of a change in currency to that of a specie basis, in which case cheese, in our opinion, would drop the amount of the exchange, which may be one or one and a-half cents per pound. We are fully confident that the supply will not overreach the demand in sufficient quantity to require a reduction in the market price for the ensuing year.

The next question for discussion was, "The Best Plan to Avoid the Low Prices which Usually Prevail for Butter and Cheese During the Summer Months." The discussion was opened by Dr. R. R. Stone, of Elgin, in the following paper:

ADDRESS BY DR. R. R. STONE.

If any one knows how to avoid the low prices of butter and cheese which usually obtain during the hot summer months as compared with prices during balance of the year, he has got a fortune in that knowledge. In nearly all of our factories and dairies a larger flow of milk occurs during the months of June and July than any other seasons of the year, while the price netted is scarcely one-half as much per gallon as during the winter months. The aggregate amount of this difference in all the factories and dairies, swells up to an immense sum and would be of great value if a portion only could be saved. Cheese during these months has usually run down to ten and sometimes to seven or eight cents per pound, while during the winter prices have been sixteen to eighteen cents per pound.

Many may think this difference could be easily remedied by holding the cheese made during the summer while prices are low till prices advance in the fall; but such a course is not practicable, for the reason that summer cheese can not well be kept till fall and sold at the price of fall cheese, from the fact that they lose their flavor by exposure to heat longer than about thirty days. If we could adopt some plan by which we could stop making cheese while it is low and only make it when prices are remunerative, our object would be accomplished; or present some plan whereby butter and cheese could be kept from summer till fall and retain their flavor. The first plan would seem to be the most sure of success. Dairymen could easily arrange their dairies so as to stop in a measure making both butter and cheese during summer months and continue the balance of the year. The demand for cheese is usually greater from the first of May till November, than during the winter, as the latter season the markets are well supplied with fresh meats and fruits which take the place of cheese. Butter is an almost indispensable article at any time of year. Yet by a partial change I think we would receive a great benefit. For instance, in certain sections where the dairies are large and the farmers have good warm stables, to let most of their cows come in about the first of September and run dry during July and August, they will have a much larger profit per can than to have them all come in in the spring, which is the general course. The spring in many respects is an unfavorable time, from the fact that most cows are poor in flesh. Hay may be short and grain scarce. Unless a good deal of care is used, cows will have their flow of milk permanently checked before grass grows sufficiently to give a proper amount of food to keep them in condition. If they come in in September, the flush of feed is past. Cows that are in good health will go through till spring with proper feed and care, and give a fine quantity of rich milk with very remunerative prices. Then cows are mostly dry during the busy season of harvesting, and are giving milk during the winter when help is cheap and farmers are generally most at leisure.

The great difficulty in the way of holding cheese for an advance in price, is that they get too strong, or what is called "sharp," by being exposed too long to a warm atmosphere. Years ago, before cheese became such an important staple as it is now, customers liked a sharp cheese, and did not consider them fit to cut till they were six months or one year old; but year after year the demand for that kind of cheese has grown less, until at the present time you can hardly sell a sharp old cheese, except at a low price. A part-skimmed cheese, twenty to thirty days old, will now generally sell for more money than a full cream cheese six months old. In fact it is a difficult matter to sell old cheese now that years ago would have been considered just fit for the market.

Various methods are adopted by cheese makers to have cheese so made that they will hold their flavor and not get too sharp. One method is to hold the curd longer in the whey, and develop what is called a greater degree of acidity, which will make a more solid cheese and one which it takes a longer time to cure, and will hold its flavor much better. A porous cheese will soon lose its flavor by exposure to a warm atmosphere. It is a well known fact among cheese makers that cheese will bear heat well, and in fact it is absolutely necessary for its curing to be kept in a temperature of

70 to 80 degrees till it is thirty days old. After that heat becomes an injury to them and they begin to degenerate if kept in such a degree of temperature. Various plans have been suggested to stay the process of fermentation by the action of heat, so that cheese could be kept for a length of time for a better market, such as keeping them in a hermetically sealed case, which, if it was not too expensive, might be successful. Another plan, with a better prospect of success, has been tried the past summer, which is to keep them in a cold room or refrigerator, after being sufficiently cured. By this process fermentation is suspended, and they may be kept for months without getting sharp. This plan has not been sufficiently tested to enable me to recommend it for a general practice, but the plan has been partially successful the past season, and will be more thoroughly tested the coming season.

Wm. Panton thought the cost of production was the underlying principle, and believed that there was as much profit in summer as in winter dairying. When dairymen have to pay $28 or $30 per ton for meal, as is the case this winter, they must have more for their milk.

Lewis Steward, of Plano, wanted to know what was done with the cheese that was made in summer and kept over until winter.

Dr. Stone said as a general thing the English were fond of this kind of cheese, which was known in the market as sharp cheese, but now England was overstocked with it.

R. W. Stewart, of McHenry, said he never heard of a dealer inquiring at a factory for old sharp cheese.

The question was further discussed by W. F. Osgood, of Kane; H. W. Mead, of McHenry, and Judge Wilcox, of Elgin.

The meeting then adjourned to 7 o'clock p. m.

EVENING SESSION.

On assembling in the evening the above question was taken up and fully discussed. Some of the gentlemen thought the manufacture of cheese had much to do with the low prices.

M. N. Turner, of Burlington, Iowa, said he was a cheese maker and used the Cheddar process and always had good cheese.

Judge Wilcox thought if the price of milk could be regulated the price of cheese could also be regulated.

I. Boise, of Marengo, was in favor of winter dairying, and said he could more easily make $100 from a winter cow than a man could $60 from a summer cow. At present he was milking 102 cows and received about 2,735 pounds of milk per day,—nearly 27 pounds per cow.

R. W. Stewart found trouble with milk when cows drank stagnant water. Good, pure water for cows would produce good milk.

E. C. Kincaid moved that a committee of three be appointed to receive resolutions and motions and report the same to the Association. The Chair appointed M. H. Thompson, Drs. Stone and Tefft as such committee.

On motion, the Association adjourned to 9 a. m. Thursday.

SECOND DAY—MORNING.

The President called the Association to order at 10 a. m.

The next question on the programme for discussion, "The Best Method of Keeping Up the Supply of Milk During Summer Months," was opened by Judge Wilcox, of Elgin. His idea was to feed green cornstalks, as they were more nutritious than hay or pasture, and the supply of milk was kept up better than ever before. Would sow the corn with drills and not cultivate it, so as to cut it with a reaper; would also have rye for early feed.

R. W. Stewart coincided with Judge Wilcox, and believed it best to have land exceedingly rich. Did not believe in cutting up corn that was to be used for feed; liked Hungarian grass, which he cut before heading.

C. H. Larkin thought that a man should carry his wits with him to help keep up the supply of milk. Must adapt things to circumstances.

H. W. Mead, of McHenry, said that Hungarian would be fit to cut in fifty or sixty days. This year he let his grass get ripe and fed it to cattle, and they relished it better than hay.

Judge Wilcox sowed Hungarian about the 27th of June and cut it about the 1st of September, and had a very good crop. Where farms are small must resort to something else than grazing. Hungarian must be cut early.

Geo. E. Morrow, of Chicago, did not think there was as much nutriment in small stalks of corn as in larger ones.

C. H. Larkin makes an acre of his field corn fodder equal one ton of hay.

President McLean found that Hungarian grass increased the supply of milk.

E. H. Seward thought that Hungarian was good for feed.

M. N. Turner, of Iowa, did not like to feed corn fodder. To keep up the supply of milk, feed in manger, feed corn and cob after crushing.

Dr. Tefft did not think cobs any better than saw-dust.

R. W. Stewart had a johnny-cake made of this kind of feed and it tasted like the raspings of cow's horns.

The committee to whom was referred the communication from the Secretary of the State Agricultural Society submitted the following report, which was adopted:

The Illinois State Dairymen's Association recognize the importance of securing a satisfactory exhibition of dairy products at our State Fairs, believing that such exhibitions may be made highly beneficial in still further developing the dairy interest, and it will heartily co-operate with the State Board of Agriculture in its efforts to reach the desired result. In response to the request of the Secretary of the Board the following recommendations are respectfully made :

It is essential that a building suitable for the purpose be provided, and this should be under the superintendence of a practical dairyman, with sufficient assistance to prevent improper handling of the goods exhibited, as dairy products, especially butter, should be handled only by the committee appointed for the purpose. Exhibitors should show their goods in attractive packages, and the cheese should be removed from the boxes.

The names of exhibitors should not be made public until after the awards of premiums have been made.

Great care should be exercised in the selection of competent, unbiased and disinterested awarding committees.

To call out a large display, and thus insure a good exhibition, liberal premiums should be offered.

In connection with the exhibition of butter and cheese, inducements should be offered and facilities furnished for an exhibition of dairy apparatus of all kinds. We believe it would be practicable, and a feature of much interest, to have the operation of butter and cheese making conducted on the grounds by experts.

We recommend the offer, in addition to the premiums for best cow, of liberal sweepstakes' premiums for the best herds of not less than five cows in milk. It is believed that liberal premiums of this class would call out an exhibition of representatives of the different dairy breeds, which would give an unusually good opportunity for comparison of their merits. Facilities for caring for the milk would be essential, and it is recommended that in awarding premiums to cows exhibited, the tests as to quantity and quality of milk and its products produced on the grounds, be taken into consideration.

It is further recommended that liberal premiums be offered for the best and most profitably managed dairies, as shown by certified reports for a year or a given number of days, and by personal examination by a committee appointed by the Board.

Dr. Stone moved the appointment of a committee of five to make nominations for the ensuing year.

The chair appointed R. R. Stone, Judge Wilcox, R. W. Stewart, I. Boise and D. Seavey.

Dr. Stone moved to amend the Constitution by fixing the Admission Fee at $1.00 each.

Judge Wilcox moved to amend the amendment by substituting 50 cents fee. Lost. The original motion carried.

Dr. R. R. Stone, I. H. Wanzer and Wm. Panton, were appointed a committee to solicit members, and a large number of those present became members.

The Association then adjourned to 2 p. m.

AFTERNOON SESSION.

The Association was called to order at 2 p. m.

The Treasurer presented his report, showing that he had received $32 for membership and paid out $12 for expenses. The report was received and placed on file.

"The Advantages of the Associated System for the Manufacture of Butter and Cheese, as Compared with the Old System of Individual Dairies," was upon motion passed over, as there was not time to discuss it.

I. H. Wanzer, of Elgin, was to open the above question, and prepared the following paper upon the subject:

ADDRESS BY I. H. WANZER.

In speaking of the advantages of the associated system of dairying over the old or private way, I shall speak more of butter than of cheese, as that is the business to which I have been giving my whole attention for the past few years.

The art of manufacturing dairy products goes so far back into the past that I find it difficult to read up its early history. But this much I know, that even within our own memory, great improvements have been made, and the greatest within the last twenty years, upon the factory or associated plan. Under this plan our dairy products have been so improved, and the tastes of the world so educated, that in turn it now demands of us butter and cheese of a quality such as the world has never before known.

The advantages of the factory system over the old or private way, seems so plain that it hardly needs discussion to prove its truth. The concentrating of large quantities of milk at single points where all of the necessary conveniences can be had, and placing all under one management, has proven one of the greatest blessings to the business, and as there is but one good butter maker in about every ten, we find a further economy in placing as much milk under his management as possible. To make good butter or cheese the same conveniences must be had in the dairy of 20 cows as in the factory of 1,000 cows; the same skill had in manufacturing upon the farm as in a large factory. And as all the necessary requirements in point of location, water, etc., are few and far between in this level western country, and as it is only at these points that we can bring about perfection in our working arrangements, it would seem that the concentrating of milk at these points was of the utmost importance in order to bring about that perfection in our products that the markets demand. If we would bring our butter and cheese up to that high standard of excellence which we think it might be brought to, we must stop setting our milk in vegetable cellars, kitchens and pantries, and study deeper into the requisites of good butter making. To approximate something nearly relative to the profits of the two plans of working, suppose I go into a neighborhood where they are making butter from 800 cows upon the old plan, and I induce them to concentrate their milk at a single point where it can be manufactured upon the creamery system. The butter before has brought them upon an average 20 cents per pound; now it brings them 40 cents per pound. Before this the butter brought $24,000 per year; now it brings them $48,000. Thus in this small community of about five miles square, I distribute, not only this year, but for time to come, $24,000 more per year than before. Now if these farmers could just live before they can now pay their debts, improve their farms and increase the comforts of home.

Be it said to the credit of the west we are looking about us, and for the last few years have been making the discovery that good butter and cheese can be made in the west, and the west has been doing this while the east has been lying back upon its laurels, satisfied that it was beating the world, and if we are not mistaken in the meantime the west has beaten the east. We judge this from the fact that our creamery butter of the west obtains a better price in the eastern markets than the best eastern make. Besides the enhanced value of the butter made in our factories, there are other important considerations, among which is the relief that it brings to the household, especially to the wives and mothers of our western country. The additional care of the dairy to the labors of the housekeeper often proves the straw that breaks the camel's back. In those countries where the mothers are worn down with care and exhaustive manual labor, we find their people of weak intellect, and those nations steeped in ignorance. If we would have our children cared for physically and mentally, let us give the mother time for self-improvement, that she in turn, may benefit the rising generation.

Another great benefit we see arising from the associated system of dairying is, that it brings our dairymen in close contact with each other. In delivering their milk to the factory they meet, and as they meet they talk over their different methods of caring for and the management of the dairy. Where one finds an advantage in pursuing a given course, the others are quick to follow. In short, we find a sociability among dairymen that we find in other classes of agriculturalists. From this contact with one another, many obstacles peculiar to the west have been overcome and removed. Consequently the dairymen who start to-day in the business find it comparatively easy.

The same may be said of the factories. By concert of action on the part of manufacturers a process for manufacturing our milk has been brought about adapted to our climate and markets, and we see nothing but encouragement in the future for the associated plan of dairying in the west.

But few of us know of the difficulties which lay in the way of the pioneer factorymen of the west. The losses they sustained in overcoming the differences growing out of soil, climate and water, as comparing the west to the east, are only known to themselves. Among the men who overcame the difficulties I might mention T. K. Wait, R. R. Stone, Robert W. and

Wm. Stewart, Wood & Son and Martin Switzer, coupled with such journalists as Rodney Welch, G. E. Morrow, James Clinton, and others. These men fought long and hard against the unfavorable predictions of the east, the differences in soil, climate, water and markets of the west, and even against the advice of their own best western friends.

These men have traveled thousands of miles on horse and by rail, and the midnight lamp has often burned over their earnest and determined consultations. When the manufacturer had gained a point he was quick to give it to the journalist and the journalist was quick to give it to the west, and in this way our fair land has been relieved of the odium that has so long rested upon its dairy products. Whatever these men have failed to gain in wealth, let us not fail to acknowledge them as the conquerors of a mighty field.

Let us take courage and go on. The toil and patience of a few more years will bring the belt of country represented by this convention to be the acknowledged Center of the Dairy World.

"What improvement has been made within the past few years in the Manufacture of Butter and Cheese, and its Results," was passed over on account of the absence of the gentlemen appointed to open the discussion.

"The Best Method of Improving and Supplying the Dairy," was opened by the reading of an essay from C. C. Buell, of Whiteside county, as follows:

ADDRESS BY C. C. BUELL.

Mr. President and Gentlemen of the Illinois Dairymen's Association:

How to Improve the Dairy? The discussion of this question, I conceive, must lie in a single direction, viz:

First, As to breeds.

Second, How practically and profitably to apply the conclusions arrived at under the first head.

First, then, as to breeds. The concurrent authority of writers on this subject, as well probably as the experience and observation of dairymen present, leads to the conclusion that superior dairy qualities belong *exclusively* to no breed. The common stock, so called, furnishes some excellent milkers, both for cheese and butter dairying; so does the Short-Horn, the Devon, &c.

It is equally well settled that certain breeds of cattle are more uniformly good milkers than others. I suppose no one here is ready to controvert the proposition that throwing aside the expense of the animals, and considering alone the product, under circumstances of good management, the Jersey or Alderney stock stand unrivalled for butter dairying. For the cheese dairy the Ayrshire occupies a similar position. For the butter dairy, the Ayrshire is also by high authority well recommended, and especially so when the feed is poor or the pasture inclined to the swampy. These conditions, however, would suggest some other than the dairy business.

The Short-Horns, the Devons, and the Herefords, excel in qualities peculiar to them; but as milkers, either for the cheese or butter dairy, do not rank above the common stock, and all these, in qualities which are essential for dairy purposes proper, fall far below the Jersey or Ayrshire.

If these remarks are true, the improvement of the dairy proper is to be never directly and certainly secured by propagating the leading dairy breeds of cattle, viz: the Jersey and the Ayrshire.

I omit to mention some other kinds of cattle, such as the Holstein, the Kerry, the Cream Pot, &c., of which I know nothing, of which little comparatively has been written, and of which the specimens in this country are so few as practically to leave them out of the account.

Second, How practically and profitably to apply the above conclusions?

In any event the pure bred Jersey and Ayrshire must for a long time to come, stand in the same relation to the dairy interest that the pure bred Short-Horn does to the beef producing interest. The increase will be valuable, primarily, for breeding purposes; secondarily, for the dairy product. Herds approximating to full blood, will multiply precisely as herds approximating to the full blood Short-Horn have multiplied, and with the same degrees of advantage. Choice selections from the common stock or from other thoroughbred cattle, bred to a full blood Jersey or Ayrshire, I believe will give excellent results. According to the laws of stock breeding, considered already established, the male full blood will, with great certainty, give to his immediate progeny the peculiar qualities of his race. A male animal, himself a cross, can not be relied upon with the same degree of certainty, no matter what his individual excellencies may be. Full blood Jersey or Ayrshire males are not difficult to obtain, nor are they out of the reach of the ordinary dairymen as to expense.

These remarks imply that the dairymen will make good the wasting of his herd from heifers of his own raising. A dairyman will not of course sell a choice cow. If a farmer with five or ten cows sells his best cow, it is at a high figure. With a dairy of forty or more cows, calves, by a Jersey or Ayrshire bull from choice cows, can be raised which will be certain to make better cows than any that can be bought.

The conclusion then to which I come, summarily expressed, is—that the improvement of the dairy, under the circumstances which at present surround the business of dairying, will be most certainly and satisfactorily secured by breeding cows of good milking qualities to full blood Jersey or Ayrshire bulls.

I. Boise, of Marengo, thought a man could buy better cows than he could raise and at a less cost too. He fed his cows every day, and got a return every night and morning. Some of his cows give as much as 30 pounds of milk per day. Oats is the best mixture for feed, as it makes the butter firm and hard. He would take 150 acres and place 50 cows upon the land and make the cows pay $100 per head. The net profit would be not far from $60 apiece.

Dr. Tefft wanted Mr. Boise to tell how much milk it would take to make a pound of butter the year round.

Mr. Boise said from 24 to 25 pounds. May and June are poor dairy months, as it requires more milk then to make a pound of butter than in any other months. In October twenty-one pounds of milk are required to make a pound of butter.

Dr. Tefft was called on to state what it cost him to produce milk, and he replied that this winter his cows were running him in debt a dollar per day: 40 in number; 25 of the cows are in milk.

Judge Wilcox has 37 cows, and received 22,940 gallons of milk, for which he received $2,787.08; $75.38 per cow.

The Committee on Nominations for the ensuing year, reported the following officers:

President—J. R. McLean, Elgin.

Vice Presidents—W. H. Stewart, McHenry County; W. F. Osgood, Kane: I. H. Wanzer, Cook; Joseph Reynolds, Will; G. D. Henning, Kendall; Lewis Steward, Kendall; D. Seavey, LaSalle; L. M. Brown, Lake; C. W. Gould, Cook; C. C. Buell, Whiteside; W. H. Dunham, Boone.

Secretary—M. H. Thompson, of Elgin.

Treasurer—W. H. Meade, of McHenry.

The report of the Committee was adopted.

Dr. Stone moved that the officers have the proceedings published in pamphlet form. Carried.

The Committee on Resolutions reported that nothing of importance had come into their hands and they had nothing to report.

The next annual meeting will be held in Elgin.

On motion of I. Boise, a vote of thanks was returned for the use of the Court House.

On motion, Henry Edwards was appointed to solicit membership in Dundee.

The Association then adjourned.

AGRICULTURAL
EXPERIMENT STATION.
JAN 1890
UNIVERSITY OF ILLINOIS.

NOTE FROM THE SECRETARY.

For the late appearance of this book, I would say that, upon entering upon the duties of Secretary, I found that no official record had been kept of its organization or of its first annual meeting. Many of the addresses, and other matter pertaining to the compilation, had been carried away by the authors of the same, consequently I was at a loss where to begin; neither had we sufficient funds to get out the proceedings in pamphlet form—as voted by the Association. To overcome these difficulties took time and labor,—first, to secure the necessary funds; second, to collect the scattered matter for the pamphlet. I tender my acknowledgments for valuable information, statistics, etc., to Messrs. Dr. R. R. Stone, J. R. McLean, and THE ELGIN ADVOCATE.

If any misstatements have found their way into this book, the above explanation is my apology.

M. H. THOMPSON, Secretary.

P. S.—Copies of this work will be sent by mail to any address on receipt of 25 cents.

NAMES OF MEMBERS

OF

THE ELGIN BOARD OF TRADE.

Baltz, Charles, Cheese Dealer	Chicago.
Bigalow, A., “ “	“
Bogardus, H. A. & Co., Cheese Dealers	“
Barclay, D. F	Elgin.
Browning, S. W	“
Brown, Jas	“
Baily, C. S	Genoa.
Burton, Wm	“
Borden, J. T	Brewster, N. Y.
Brotzman, J	Riley.
Church, C. C	Elgin.
Church, A. B	“
Chaffer, A. J	“
Chapman, S. & S. W	“
Clock, Charles	Clintonville.
Crafts, Charles	East Burlington.
Crawford, Lord & Co	New Lebanon.
Conn, G. W	Hebron.
Camp, M. J	DeKalb.
Davis Bros	Chicago.
Dow, Moran & Co	“
Dean, C. P	Elgin.
Ford, H. L	Geneva.
Frink, J. M	Marengo.
Goodrich, George	Union.
Gage, J. H	Udina.
Gould, C. W	Elgin.
Hawthorne & Bosworth	“
Haythorne & Co	“
Harvey, George	“
Hawley, C. B	Dundee.
Jones, E. W., Cheese Dealer	New York City.
Ketchum, E. G	Dundee.
Kelly, L. M	Elgin.
Knapp & Plummer	Lombard.
Kingsley, J. W	Barrington.
Linkfield & Hussey	Elgin.
Leatherman, A	“
Larkin, C. H	“
Lawrence, O. F	“
Lasher, S. & Son	“
Lester & Co	Salt Creek.
Lake, G. W	Gray Willow Factory.
Lovell, A	Sycamore.
McLean, J. R	Elgin.
Munn, Frank	Belvidere.

Mead, H. W	Hebron.
Martin, J. W	Sycamore.
McAllister, O. S	Hampshire.
Nolting, A	Hanover.
Osborn, G. L	Lodi.
Osgood, W. F	St. Charles.
Panton, Wm	Clintonville.
Pierce, W. L	Genoa.
Pease, W. L	Elgin.
Preston, Jacob	Genoa.
Palmer & Hinsdell	Elgin.
Peck, E. A	North Plato.
Parks & Craft	East Burlington.
Rogers, J. H	“ “
Richardson & Gooch	Chicago.
Rice, P. H	Elgin.
Rogers, H. C	Plato.
Randall, A	Victor.
Stone, Dr. R. R	Elgin.
Slosson, R. H	Chicago.
Switzer, Martin	St. Charles.
Schranck, Peter	Elgin.
Shepard, F. S	Dundee.
Sherwin, A	Elgin.
Sheldon, L. W	Union.
Schoolmaker & Miller	South Grove.
Schrader, W. G	DuPage Co.
Thompson, M. H	Elgin.
Town, M. C	“
Tefft, Dr. J	“
Tefft, E. A	Clintonville.
Vosburgh, J. B	Richmond.
Weightman, W. L	Buena Vista.
Wells, C. B. & Co	Hampshire.
Warner, Wm	Elgin.
Weld, R. & S. E	“
Wilbern, Capt. A	“
Weld, O. B	“
Wright, F. W	“
Wilson, H	“
Webber, C. N	Woodstock.
Weaver, N	DeKalb.
Walker, John	Clintonville.
Wanzer, S	Elgin.
Wattles, R. M	Nunda.
Washburn, J. H	Blackberry.
Walters, J. S	Cherry Valley.
Wanzer, I. H	Elgin.
Wood, D. E	Huntley.

NAMES OF FACTORYMEN,

MEMBERS OF THE ELGIN BOARD OF TRADE.

East Burlington	Factory	Parks & Craft	Proprietors.
Algonquin	"	Stone & Gould	"
St. Charles	"	W. F. Osgood	Salesman.
Genoa	"	Wm. Burton	Proprietor
Elgin Butter	"	I. H. Wanzer	Superintendent.
Home	"	C. W. Gould	Proprietor.
Wayne	"	"	"
Huntley	"	D. E. Wood	"
North Plato	"	E. A. Peck	"
Grey Willow	"	G. W. Lake	"
Rogers	"	C. W. Gould	"
Udina	"	J. H. Gage	"
Sycamore	"	A. Lovell	"
Clintonville	"	E. A. Tefft & Co	"
Switzer's Home	"	Martin Switzer	"
Geneva	"	"	"
Victor	"	A. Randall	"
Richmond	"	R. R. Stone	"
DuPage County	"	Knapp & Plummer	"
Hebron	"	H. W. Mead	"
Barrington	"	W. L. Clark	"
Ford's	"	H. L. Ford	Salesman.
DeKalb Co.	"	N. Weaver	Proprietor.
Sycamore	"	J. W. C. Martin	"
Squaw Grove	"	John Walker	"
New Lebanon	"	Crawford, Lord & Co.,	Proprietors.
Riley	"	J. Brotzman	Proprietor.
Franklin	"	L. W. Sheldon	"
Salt Creek	"	Lester & Co.	"
Blackberry	"	J. H. Washburn	"
Marengo	"	J. M. Frink	"
North Barrington	"	R. R. Stone	"
South Grove	"	Schoolmaker & Miller,	Proprietors.
DeKalb	"	M. J. Camp	Proprietor.
Cherry Valley	"	J. S. Walters	"
Lodi	"	G. L. Osborn	"
Hebron	"	Stewart Bros.	"
"	"	G. W. Conn	"
Ontario	"	S. Wanzer	"
Randall	"	J. B Vosburgh	"
Itasca	"	W. G. Schrader	"
Kane County	"	S. S. Mann	"
East Plato	"	D. Johnson	"
Plato	"	"	"
Northwestern	"	A. Nolting	"

TRANSACTIONS OF THE ELGIN BOARD OF TRADE,

FROM MARCH 17TH, 1874, TO JAN. 12TH, 1875, INCLUSIVE,

As shown by Secretary's Books of Transactions, held on regular sale days:

DATES.	CHEESE.		BUTTER.	AMOUNT.
	BOXES.	LBS.	LBS.	
March 17	500	23,050	7,600	$6,198 50
" 24	460	29,050	8,000	6,096 00
" 31	833	36,396	3,050	6,113 36
April 7	475	18,400	6,865	5,272 62
" 14	640	26,410	7,576	6,914 31
" 21	775	34,975	7,000	7,706 05
" 28	656	31,020	8,200	7,609 02
May 5	511	22,241	1,700	3,939 74
" 12	790	36,950	3,000	6,201 25
" 19	1,101	55,135	....	7,536 62
" 26	1,434	62,624	....	7,681 33
June 2	1,115	69,580	....	8,432 92
" 9	1,505	73,501	....	9,093 11
" 16	2,354	108,259	....	11,716 27
" 23	3,775	173,892	1,100	18,569 53
" 30	2,860	83,700	2,500	13,809 23
July 7	3,285	143,715	5,000	14,834 22
" 14	1,942	81,310	....	9,932 71
" 21	1,250	46,300	1,200	4,877 64
" 28	4,775	496,360	3,700	18,965 48
August 4	2,643	109,770	3,400	12,728 09
" 11	1,828	714,408	3,400	8,924 93
" 18	548	23,290	3,500	3,391 00
" 25	1,380	57,025	1,000	7,263 91
September 1	4,396	194,735	2,500	23,156 85
" 8	2,300	103,700	1,000	13,122 46
" 15	2,959	113,750	3,500	18,344 65
" 22	1,020	48,970	1,000	7,097 87
" 29	2,870	168,816	1,000	10,858 06
October 6	600	27,400	1,000	4,147 50
" 13	930	40,940	3,400	7,196 80
" 20	300	13,800	5,860	4,296 00
" 27	1,675	71,500	8,000	12,919 64
November 10	2,844	110,815	2,675	16,535 93
" 17	300	11,600	1,000	1,967 50
December 1	570	28,600	5,800	6,152 50
" 15	3,159	62.700	5,800	19,720 05
January 12, 1875	400	17,700	17,000	9.205 20
Total	65,028	2,955,202	136,426	$368,528 58

[The accompanying figures of the transactions of the Elgin Board of Trade, while not properly belonging to the Proceedings of the State Dairymen's Association, are presented to give an idea of the amount of business done on the Board, as well as to show the amount of dairy products handled on the Board during the time specified. The showing is very gratifying, and further shows that the Elgin Board of Trade is doing much to make Elgin the great Dairy Center of the Northwest.

PROCEEDINGS

OF THE

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION,

AT ITS

SECOND ANNUAL MEETING,

HELD AT THE

CITY OF ELGIN, ILLINOIS, DECEMBER 14, 15 & 16, 1875.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

AGRICULTURAL
EXPERIMENT STATION.
JAN 1890
UNIVERSITY OF ILLINOIS.

ELGIN, ILL.:
THE ADVOCATE POWER PRINTING AND PUBLISHING HOUSE,
14 & & 16 River Street.
1876.

OFFICERS OF THE ASSOCIATION

For 1876.

PRESIDENT,

DR. J. TEFFT, ELGIN, ILL.

VICE-PRESIDENTS.

C. C. BUELL, Rock Falls, Whiteside County, Illinois.
S. W. KINGSLEY, Dundee, Kane County, Illinois.
W. J. HENNING, Plano, Kendall County, Illinois.
WM. PATTON, Sandwich, DeKalb County, Illinois.
THOS. WRIGHT, LaSalle County, Illinois.
LUTHER BARTLETT, Bartlett, Illinois.
L. M. BROWN, Lake County, Illinois.
B. CORNWELL, Boone County.
IRA ALBRO, Wayne, DuPage County, Illinois.
E. H. SEWARD, Marengo, McHenry County, Illinois.
R. G. GARNHARD, Ogle County, Illinois.

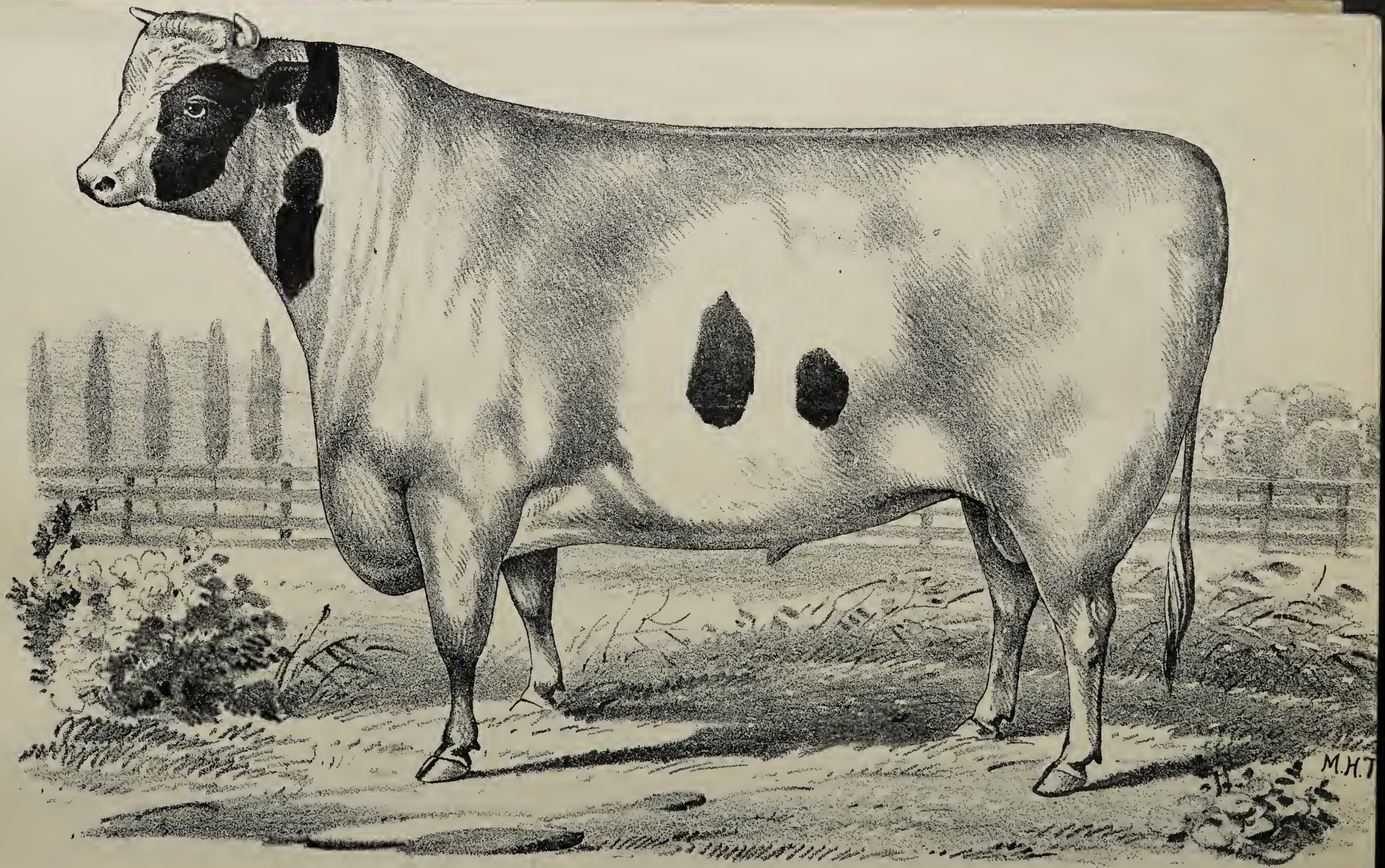
SECRETARY,

M. H. THOMPSON, ELGIN, ILL.

TREASURER,

H. W. MEAD, HEBRON, ILL.

The third and next annual meeting of the Association will be held at the city of Elgin, Tuesday, Wednesday and Thursday, December 12, 13 and 14, 1876.



HOLSTEIN BULL.
"FOURTH DUKE OF BELMONT."
Property of F. W. WRIGHT, ESQ. ELGIN, ILLS
Age 3 Years & 8 Month

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OF THE
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Adams, D C.,	Dundee,	Illinois.
Adams, Guy,	Elgin,	“
Albro, Ira,	Wayne,	“
Baltz, Chas.,	Chicago,	“
Barnard, Hon. A. S.,	Lisle,	“
Bartholomew, S. K.,	Marengo,	“
Bartlett, L.,	Bartlett,	“
Bierman, H.,	Elgin,	“
Bishop, Thos.,	“	“
Boies, Israel,	Marengo,	“
Boies, Wm.,	“	“
Bosworth, F. S.,	Elgin,	“
Bosworth, I. C.	“	“
Brown, L. M.,	Lake County,	“
Browning, J. H.,	Elgin,	“
Bryant, E. W.,	Princeton,	“
Buell, C. C.,	Rock Falls,	“
Bumgartner Bros.,	Frankfort,	“
Burns, R. C.,	Elgin,	“
Burritt, Peter,	“	“
Burton, Wm.,	Genoa,	“
Carpenter, Hon. J. A.,	Elgin,	“
Chapman, S.,	Oneida,	“
Chapman, S. W.,	Elgin,	“
Christian, D. L.,	Peotone,	“
Church, A. B.,	Elgin,	“
Church, C. C.,	“	“
Clark, John,	Somonauk,	“
Cole & Craft,	Gray Willow,	“
Corron, W. T.,	Elgin,	“
Cornwell, B.,	Boone County,	“
Davidson, O.,	Elgin,	“
Eddy, John,	Harmony,	“
Eldred, N.	Gilman,	“
Emmert, W. P.,	Rockford,	“
Fairrington, C. W.,	Rockford,	“
Ford, H. L.,	Geneva,	“
Gage, J. H.,	Udina,	“
Garnhard, R. G.,	Ogle County,	“
Gillett, Edw.,	Aurora,	“
Gillilan, John,	Algonquin,	“
Gould, C. W.,	Elgin,	“
Hammond, D. S.,	Elgin,	“
Handy, Saml.,	Downer's Grove,	“
Hatch, Isaac,	Little Rock,	“
Hawthorne, Geo. E.,	Elgin,	“
Heidemann, A.,	“	“
Henning, W. J.,	Plano,	“
Holt, D. M.,	Rockford,	“
Johnson, D.,	Elgin,	“
Keating, John,	Elgin,	“
Ketchum, E. G.,	Dundee,	“
Kingsley, J. M.,	Barrington,	“
Kingsley, S. W.,	Dundee,	“
Klocke, Chas.,	Clintonville,	“
Lake, G. W.,	Gray Willow,	“
Larkin, C. H.,	Elgin,	“
Lester, Fred.,	Salt Creek,	“

Lord, G. P.,	Elgin,	Illinois.
Lovell, A.,	Sycamore,	"
Mallery & Co.,	Elgin,	"
Maltby, C. A.,	North Plato,	"
Mann & Sherwin,	Elgin,	"
Mead, H. W.,	Hebron,	"
Mitchell, David,	Algonquin,	"
Moran, P.,	Chicago,	"
Morrow, G. E.,	Chicago,	
Murphy, Thos.,		"
McD. Richards, T.,	Woodstock,	"
McClure, F. L.,	Elgin,	"
McGlincy, R. P.,	"	"
McLean, J. R.,	"	"
McQueen, John A.,	"	"
Naramour, D. H.,	Lisle,	"
Nolting, A.,	Elgin,	"
Osgood, W. F.,	St. Charles,	"
Patridge, L. H.,	Millington,	"
Patton, Wm.,	Sandwich,	"
Patton, Wm.,	Clintonville,	"
Probert, Chas. L.,	Gray Willow,	"
Richards, D.,	Chicago,	"
Rogers, John,	Burlington,	"
Root, A. W.,	Elgin,	"
Russell, J. N.,	Elgin,	"
Scofield, D. C.,	Elgin,	"
Severy, D.,	Leland,	"
Seward, E. H.,	Marengo,	"
Shedden, Andrew,	Udina,	"
Sheldon, L. W,,	Union,	"
Shepperd, Frank,	Elgin,	"
Stevens, C. V.,	Somonauk,	"
Stewart, Wm. H.,	Woodstock,	"
Stewart, R. W.,	Hebron,	"
Stoll, H. C.,	Frankfort,	"
Stone, R. R.,	Elgin,	"
Switzer, M.,	St. Charles,	"
Tefft, E. A.,	Clintonville,	"
Tefft Joseph,	Elgin,	"
Tefft Jon	"	"
Thompson, A.,	"	"
Thompson, M. H.,	"	"
Thompson, T.,	"	"
Tuttle, Milo,	Sandwich,	"
Waldron, E. D.,	Elgin,	"
Wanzer, I. H.,	"	"
Ward, L. C.,	St. Charles,	"
Ward, S.,	Lemont,	"
Washburn, Jas.,	S. La Fox,	"
Waterman, G. W.,	Barrington,	"
Wheeler, S. M.,	Elgin,	"
Wilcox, S.,	Elgin,	"
Wilson, H.,	Elgin,	"
Wood, D. E.,	Huntley,	"
Wood, Jackson,	"	"
Wright, F. W.,	Elgin,	"
Wright, S. N.,	Clintonville,	"
Wright, Thos.	LaSalle County,	"
Wilder, C. H.,	Evansville,	Wisconsin.

CONSTITUTION.

SECTION 1. This Association shall be known as the Illinois State Dairymen's Association.

SEC. 2. The officers of this Association shall consist of a President, one Vice-President from every county in the State represented in the dairy interest, a Secretary and a Treasurer.

SEC. 3. The officers of this Association shall be elected by acclamation at the annual meeting, to be held on the second Thursday in December in each year, having been previously nominated by a committee appointed for that purpose.

SEC. 4. The place and time of meeting shall be designated at each previous meeting.

SEC. 5. The objects of this Association shall be the encouragement of the dairy interests in our State, with mutual improvement as relates to dairy interests in manufacturing and marketing the product of our dairies.

SEC. 6. Persons may become members of this Association by the payment of an annual fee of $1.00.

SEC. 7. The officers of this Association shall constitute an Executive Board, for the transaction of business.

SEC. 8. The Constitution of this Association may be altered at any regular meeting of the Association, on giving notice at the previous meeting of such intention.

TO THE DAIRYMEN OF ILLINOIS.

It is an old and well-established saying that, to insure success in any undertaking, one must first thoroughly understand the business in which he is to engage. The dairy business is no exception to this rule. There are, no doubt, many persons in Illinois who are now engaged in dairying who, unless they become better posted in their business, had better turn their attention to some other branch of agriculture to which they and their farms are better adapted. Many are not making the dairy a real success, in any sense of the word; they are putting an inferior article upon the market, with no profit to themselves, but a decided injury to the general business. They are not possessed of that methodical system, close application and cleanly habits which are indispensable to complete success. The question arises, How shall the dairymen of Illinois become thoroughly posted in all that pertains to their business? It would seem that any rule which is applicable to the great leading industries of the country would apply to dairying or any other branch of agriculture.

Perhaps by no other way can this thorough knowledge be possessed better than by experience and interchanging of ideas; and no method is more direct for the diffusion of ideas than by organization.

The great leading industries of our nation have their organizations, for the double purpose of protecting themselves from imposition and fraud as well as maintaining their commercial rights and privileges among kindred associations of the world. Iron, leather, lumber, corporations of all kinds, as well as the professions, trades and callings in all the pursuits of life, are represented through their organizations. There should be no exception in regard to any branch of agriculture. Stock-raisers, wool-growers horticulturists, fruit-growers, believe that in union there is strength; and, therefore, all have their organizations.

With this belief the dairymen of Illinois organized "The Illinois State Dairymen's Association." The organization was perfected March 3, 1874, and now, scarcely two years old, is making rapid strides towards the front rank of State Dairy Associations of the country. Its future influence for good or for evil rests with the dairymen of Illinois. If wisely managed, it can do your interest much good; but if unwise counsels prevail, only harm will be the result. Do not hesitate, at any and all times, to manfully protect and defend your commercial rights and privileges. Your business is an honorable one; it is essential to the happiness and comfort of the world; you have millions invested in it, and it is fast becoming one of the great leading branches of commerce of the West.

Illinois grass-fed beef was awarded the highest prize at the World's Fair at London, and now, if our dairy products could be properly exhibited, they, too, might receive the highest commendation at the great American Centennial, which would place the standing of our products beyond the reach of the manipulator's brand.

Our local Boards of Trade should be maintained at all hazards, as they have saved many thousands of dollars to the dairymen of Illinois during the past year, while the dealers have not suffered thereby. Dairymen should feel it a duty, as well as a privilege, to attend the meetings of this Association, and become members, thereby lending their material aid as well as their influence. At the next annual meeting 200 practical dairymen of Illinois should be in attendance, and become members of the association.

With a little effort, this association, for influence abroad and usefulness at home, will be second to none in the Union.

SECRETARY.

ELGIN, Jan. 25, 1876.

PROGRAMME OF THE SECOND ANNUAL MEETING.

1. Address of Welcome, - - - - - - By the PRESIDENT.

2. Past and future of the dairy interest of Illinois.
D. F. BARCLAY, Elgin; DR. J. TEFFT, Elgin.

3. The supply and demand of dairy products and their prospective markets.
DR. R. R. STONE, Elgin; I. BOIES, Marengo.

4. The best plan to avoid the low prices which usually prevail for Butter and Cheese during the summer months.
S. WILCOX, Elgin; E. H. SEWARD, Marengo.

5. The best method of keeping up the supply of milk during the summer drought.
JOHN KEATING, Elgin; D. C. ADAMS, Barrington.

6. What improvements have been made within the past few years in the manufacture of Butter and Cheese, and its results?
D. E. WOOD, Huntley; H. W. MEAD, Hebron.

7. The best method of improving and supplying the dairy; different breeds, and their adaptation to our climate.
C. C. BUELL, Rock Falls; DR. J. TEFFT, Elgin.

8. The manufacture of skimmed cheese—is it injurious or beneficial to the dairy interest?
I. H. WANZER, Elgin; CHAS. BALTZ, Chicago.

9. Marketing dairy products; Local Boards of Trade vs. Individual and Commission Sales.
Capt. W. H. STEWART, Hebron; J. R. MCLEAN, Elgin.

10. Grasses, pasturage, fodder, and water of the West—are they really adapted to produce pure milk?
I. H. WANZER, D. C. SCOFIELD, Elgin; R. W. STEWART, Hebron.

11. Which produces the most serious results, poor milk or poor cheese makers?
C. H. LARKIN, Elgin; S. W. KINGSLEY, Barrington.

12. Large and small dairies, which are the most profitable?
G. E. MORROW, Chicago; I. BOIES, Marengo.

13. What is the real cause of the difference in price of Eastern and Western Cheese?
R. W. STEWART, Hebron; S. WILCOX, R. R. STONE, Elgin.

14. Is the dairy business in the West liable to be overdone, so that it will not be as remunerative as other branches of agriculture?
LEWIS STEWART, Plano; C. C. BUELL, Rock Falls.

ILLINOIS STATE DAIRYMEN'S ASSOCIATION.

SECOND ANNUAL MEETING,

AT ELGIN, DECEMBER 14TH, 15TH AND 16TH, 1875.

The convention was called to order by President J. R. McLean, at 11 a. m., and after an organization was effected, the convention adjourned to meet at 1:30 p. m.

AFTERNOON SESSION.

TUESDAY, Dec. 14, 1875—1:30 p. m.

Convention called to order by President McLEAN, who then read the Annual Address of Welcome, which was as follows:

PRESIDENT McLEAN'S ADDRESS.

LADIES AND GENTLEMEN: It has become a custom among associations of this kind, of attaching a penalty to its President, in such a manner that it seems very difficult to avoid, and frequently more so to satisfy its demand. No one can possibly regret this state of things more than I do at this time. In making up the Programme for this Second Annual Meeting of the State Dairymen's Association of Illinois, the Executive Committee have named, as the first order of business, the Address of Welcome by the President.

This is the cause of the above expressed regrets. Not that I would withhold the welcome, but the fear that I shall not employ suitable language to convey to you such expressions of welcome as the occasion requires, and at the same time do justice to the citizens and dairymen of Elgin. I hope that you will receive, with the same kind feelings that possess our hearts in extending to you a most cordial and hearty welcome to the birthplace and early home of the dairy interest in this State, as also of Wisconsin. It was from Elgin the first can of milk was sent to Chicago, west of that city. It was brought by P. H. Smith, the pioneer dairyman, on an ox cart to the depot, in 1851, and shipped as an experiment, and it proved a success. From this small beginning, the dairy business has steadily increased, and is now the leading branch of agriculture in the north and western portion of this State, and also a large portion of the State of Wisconsin.

In May, 1863, the first Dairymen's Association was organized in this city, being the first west of the State of New York. In the month of March, 1872, the first, and only successful, Board of Trade for the sale of dairy products (west of Utica) was organized at this place. Now, in view of these facts, is it strange that the dairymen should look upon Elgin as being the great center of dairying in the Northwest, and which has so much to do with regulating and controlling the prices of dairy products that are daily going forth to feed the millions? We might add, in connection with the above (if it were not thought too egotistical), that there is more milk received and manufactured in this city than any other place in the West, as the following figures demonstrate: The Illinois Condensing Factory has received, since the 1st of January, 1875, to December 31, 857,013 gallons. The Elgin Butter Company has received at its factory, for the same length of time, 413,789 gallons. Adding the latter to the former quantity, we have 1,270,802 gallons. We have mentioned the above facts and figures for the purpose of showing, to some extent, the result that has followed from the shipping of the first can of milk, as mentioned above. We pass over any further mention of dairying in this vicinity, lest we may be accused of boasting.

This is the second Annual Meeting of the Illinois State Dairymen's Association, and reunion of its members and friends, and there is a kindred feeling comes over us, like that of a New England old-fashioned Thanksgiving gathering, when the large circle of children and friends come together at the old home at the close of the busy season, when the crops are all secured and safely housed for the winter, and all having abundant reason to be grateful for the prosperity that has attended their arduous labors. With real joy and gladness they grasp each other by the hand, and welcome them to the dear old home, and talk over the blessings of the past and the prospects of the future, and learn to cherish the social relations of life. Such are our feelings, as we take you by the hand and welcome you to the old home of the dairy in this State.

Socially, the farmers, or dairymen, as a class, have the least opportunities to visit with their neighbors and friends, and cultivate their social faculties, of any class of people in the State. They have, of necessity, many cares upon them, and of such a nature as to require them to be at home, morning and evening, during the entire year,—that, in many instances, almost excludes them and their families from enjoying the social privileges that human nature requires.

I should not be justified, even if I felt disposed, to enter upon any of the topics that are to be discussed at this convention, at this time, but would say, in a general way, that the year just closed has been one of prosperity to the dairymen; although the price of the product of the dairy has not been as satisfactory as it was last year, yet we think the increase of quantity and quality will more than counterbalance the shrinkage or difference in price.

We are pleased to learn that considerable progress has been made during the year toward getting our butter and cheese on the market, upon their merits. The time has come when Western butter and cheese are sought after in the Eastern markets, and not unfrequently have they brought better prices than "choice gilt-edge State." The Eastern buyer does not now, as heretofore, pass by our butter and cheese with a sneer, because it is branded "Western."

In conclusion, gentlemen, permit me to say that in the discussion of the various topics that are to come before this Convention, I hope we may be able to communicate, as well as learn, much that shall be of practical use in our chosen calling.

Owing to the absence of some of the parties designated to open discussions of some of the topics, as arranged in the programme, it was voted not to take the questions up in their order as arranged, but take them up as called.

Topic No. 2—"Past and Future of the Dairy Interest of Illinois"—was now taken up, and the discussion opened by Dr. TEFFT, of Elgin, who read the following paper.

DR. J. TEFFT'S PAPER.

MR. PRESIDENT, AND GENTLEMEN OF THE ASSOCIATION: By request of your Executive Committee, I am before you to invite your attention, for a few moments, while I give you a few thoughts on the past and future dairy interests of Illinois. Perhaps it will be sufficiently remote for us to commence the date of our article in the year 1835, that being about the earliest settlement of Northern Illinois by the Anglo-Americans. Prior to this date but few white people had made permanent settlements thus far north, yet we have no doubt but white men visited this section long ere this; but they were transient, and mostly of that class known as "suckers," deriving that name from the fact that they followed up the water courses in the spring, and returned in the fall, as does a certain fish, known by the common name of sucker. And from this Illinois received the cognomen of the "Sucker State" (the compiler of Noah Webster's Dictionary notwithstanding).

In this early day the cow followed in the wake of the white man, as of yore, but was pailed (to use a whicher expression) by the maid all forlorn, who assumed a very unpleasant angle of body, and, with pint cup in hand

and pail astern, performed the arduous duty of drawing the lacteal fluid from the udder of the cow. From this early date, we drop down to the year mentioned above, without any remarkable incident worth relating.

In the year 1835, Northern Illinois began to settle rapidly by Eastern people, and the cow increased very much in numbers, and butter and cheese was made in small quantities, but not enough for home consumption, the balance being supplied by New York and Ohio. In 1863, the Illinois Condensing Factory, located at Elgin, commenced the manufacture of cheese on the associated plan, making in that season about 25,000 pounds. The same season a factory was established at Bloomingdale, in Cook county, but we are not informed of the amount of cheese made in that factory. Cheese sold at this time, in the markets, for from six to eight cents per pound. From and after this cheese factories rapidly increased, and in 1870, as per United States census, Illinois had sixty-nine factories, and worked in them 173 males, and 24 females, and paid for their labor $32,721, it being a fraction over $166 apiece. They worked up about 4,784,119 gallons of milk, and made 1,661,703 pounds of cheese, and the balance of the State, together with the factories, made 36,085,405 pounds of butter, and used and sold the milk from 640,321 cows, which aggregated 14,006,664 gallons. This, then, is supposed to be the sum total of the dairy products of Illinois in that year.

In the year 1874, there was reported by the members of the Elgin Board of Trade, as sold by them, 136,426 pounds of butter, and 2,955,202 pounds of cheese; and the present season, up to December 9th, there has been reported by said members, 225,175 pounds of butter, and 3,938,206 pounds of cheese. These reports by no means cover anywhere near all the dairy products made in the State, neither do they make any mention of the many thousands of gallons of milk used by the condensing factory, and also those sold in Chicago, which, together, may be counted by the millions. Nevertheless, enough has been reported to show a very large increase in the dairy interests of the State. We estimate the factories to have nearly, or quite, trebled in this State since 1870, making their number, at this time, about 200, and that the cows have fully quadrupled since that time, making their present number over 2,000,000. These figures are made without any positive data, and consequently are not fully reliable, but sufficiently so for our purpose at this time.

Now, having sketched a few thoughts on the past, allow us to turn our attention to the future prospects of the dairy interests of this State. And, in so doing, permit us to advert to our green pastures, abounding in herd's grass, red-top, red and white clover, June grass, and the like,—grasses which furnish the very sweetest and best of hay and pasturage, and, together with our springs, rills and rivulets of pure water, which adorn most of our pastures, and, where this is lacking, the ease with which we can supply, by windmills, this ever-needful aqueous fluid, which enters so largely into the composition of our milk, and which no cow giving a free flow of the same can well dispense with. Taking these things into account, and also the fact that we are located in a latitude favorable to the dairy interests, we see no good reason why the same should not succeed well in this State for years yet to come.

In years bygone, New York State was the great producer of the cereals, but by and by Ohio, Indiana, Michigan, Wisconsin and Illinois sent forward their productions in this line, and New York was forced to abandon their production, and turned her attention to the dairy, with a firm belief that the Western States could never compete with them in this undertaking. But how now? In a recent article from an Eastern paper, we see it stated that the West will soon rival the East in the dairy products, as they have already done in the cereals. The capital invested here at the West, being far less than that of the East, in proportion to the amount of dairy products produced, the feed for stock costing far less than theirs, and the cost of shipment from here to the sea coast being only about one and a quarter cent per pound, gives us a decided advantage in this line of products. We firmly believe that the future prospects of the dairy interests of Illinois depends very much upon the quality of those products. We have always claimed that no butter or cheese should be put upon the market which is not worthy of the name of the factory or maker on it so stamped as not to be easily erased, then, and in that case, if good, the maker would have a fair show of the benefits which might be derived from it, and if poor, would only have to father his own, whereas, as it now stands, he has to father his share of all the poor cheese sold in Illinois, whether made here or not. We allude to this matter here as bearing directly on the future dairy interests of this State.

Now while in 1863, only 50,000 or 100,000 pounds of cheese were made, cheese brought on the market only six or eight cents, and butter from ten to twenty-five cents per pound, and now that we have increased in the manufacture of cheese to millions of pounds per annum, and butter in proportion, the price of cheese has ranged from eight to fifteen and one-half cents, and butter from twenty-eight to forty cents per pound. Therefore, as the quantity increases, the price per pound has also increased. We here predict that the market will never be overstocked for any length of time in our day, with strictly gilt-edge butter or cheese.

It has become a pretty well-settled fact, that no one article of diet known to man and so readily obtained by him, contains all the ingredients so necessary to build up and sustain the human system in so large quantities as that of milk and its various manufactured products. If this be true, then, as we, the people, are educated to see and realize the fact, the use of milk and its manufactured products will much increase. It is the early education on this subject, that we so much need. The poet says:

> 'Tis education forms the common mind,
> Just as the twig is bent, the tree's inclined,

and we, without reserve, indorse the poet's sentiments herein expressed, believing, as we do, that the early education in regard to diet has much to do with our likes and dislikes of certain dietetic articles in after life.

Topic No. 14—"Is the Dairy Business in the West Liable to Be Overdone, so that It Will Not Be as Remunerative as Other Branches of Agriculture?"

The discussion of this topic was opened by C. C. Buell, Esq., of Whiteside County, who read the following paper:

C. C. BUELL'S PAPER.

I fear I shall not be able to present as practical a description of this subject as some may expect, or as I would most certainly desire. I have gathered no statistics relating to it, and can only argue from general facts and considerations. I conceive the question lies pretty clearly within the field of appreciation of established economic laws, and unless we omit important elements in its consideration, we ought to come to a pretty intelligent conclusion.

It seems to be a law applicable to this as well as other countries, that the average or normal value of animal products gradually but constantly increases, while that of manufactured goods as steadily decreases. We are interested so far as this discussion goes only in the first part of this statement. I need bring no further proof of the fact stated than the recollection of my hearers. Any one who can recollect forty years back, will note the gradual rise of dairy products from scarcely half their present price to their present value. Of course these values have undergone, meantime, great fluctuations, and annually undergo great fluctuations, to which they are especially liable, but these values, relatively to the value of other products, have gradually advanced. I believe we may expect this to continue in the future, and for the same reasons that have secured this advance in the past. So far as this consideration goes, then, it may be set down in favor of the negative of the question under discussion.

The statement of this question implies the fact, which is admitted, that increased production tends to diminish average or normal value. This is true especially of dairy products, even though the increase is small in part because of the perishable nature of the product. To the extent, then, that the increase of dairy products may outstrip the demand for the same, we may expect a quite violent decrease in the value to follow. The surplus may be small in proportion to the bulk of the product, and such as will, in not a long interval, be absorbed by the trade. Yet the economic law is that its effect upon values in the aggregate is quite out of proportion to the apparent magnitude of the cause. These extraordinary fluctuations in value of dairy products, sometimes going far above and sometimes far below what has been called average or normal value, may be further attributed to this, perhaps. The consumption of dairy products is nearly a fixed quantity. Cheapness or dearness affects this but little, except in the case of the very poor, perhaps. Butter is thoroughly staple, and is about as much a necessity to the whole family as tea to the old lady. Hence a very slight deficiency produces general scarcity, and a small overplus a general glut, and prices appreciate or depreciate to correspond. It would thus become a very serious matter to the producer to increase dairy products beyond market demands for any length of time. This in favor of the affirmative, and it should suggest a caution to those whose exceptional success, or whose sanguineness of expectation as to whatever they engage in leads them to make unqualified commendation of the dairy business.

But there are other economic laws applicable to our subject. The quality of dairy products has very much to do in regulating the quantity which goes into consumption, or the demand—much more, indeed, than the price. The habits of the people make butter, and to some extent cheese also, a necessary part of every meal. A pound of poor butter goes a long way. Good butter spends comparatively fast, but the table must be supplied. It is generally admitted, I believe, that the quality of both butter and cheese in this country has on the average steadily improved, and as a consequence we may believe the amount of butter and cheese consumed, pro rata, has also increased, and as a better quality of both become the rule, the consumption will continue to increase.

Further, the improved processes of dairy manufacture have introduced what may almost be called a new product. I refer to the factory and creamery systems, which turn out a distinct and superior product, both of butter and cheese. Those who have noticed the market quotations, have observed that there is really no competition between the poorer and better qualities of both butter and cheese, especially butter. "Gilt-edge" butter has a demand distinct by itself, and no matter how low common and cooking butter may go, "gilt-edge" stays up in the thirties, and in exceptional cases still higher prices are realized. As the mass of consumers become familiar with the flavor of the best qualities of butter, the demand for the same seems to increase. They are no longer satisfied with anything else. These facts indicate in what direction the profits of the dairy business lie—not in the manufacture of common, or even what pass as good, qualities of butter, but in the production of the very best. In this direction there seems little danger of the market being overstocked.

Besides, there is a limit to the supply of superior dairy products, arising from the qualifications necessary to those who engage in the dairy business and are successful. Not every farmer, and not every farmer's wife, has the aptitude to learn, or the patience to pursue, the dairy business. The factory system, to a large extent, remedies this difficulty, but it will always exist to the advantage of a favored class.

Finally, whatever may be the vicissitudes of the dairy interest in the West, it is not likely to be cut off from any advantages which may offer in the general market. The dairy products belong to what are styled concentrated products. They are valuable in proportion to bulk and weight. The foreign trade is opening more and more to them. The cost of transportation, little by little, though very slowly, is becoming cheaper. The principles of free trade and commerce are becoming more widely diffused and better understood, and as sure as civilization is progressive, are destined to go into practical operation. All these are in favor of the West, in favor of every business into which labor enters largely, and in favor of the negative of this question. It is not necessary to deny specific advantages to the East, or to any other region of country, in the dairy business. There are enough advantages belonging specifically and incontrovertibly to the West to insure to it an equality at least of success with the rest of the world.

I see, then, in conclusion, no sufficient reasons for apprehending that the dairy business in the West will not continue to offer fair rewards, in comparison with other agricultural pursuits, for the skill and industry which are likely to be engaged in it.

C. H. **Larkin** being called for, said: He came to hear and not to be heard; could not see any cause to fear; thought that if the article or product was good, it would at all times command a price above that of production; product in the West could be produced cheaper than in the East.

C. C. **Buell** thought it was not impossible to overdo the matter; dairy products were perishable, and could not be kept long; soon lost its flavor, therefore, could not retain its best consumers; the quantity consumed is nearly fixed, so that if the supply is crowded, down go prices—*away down*—and then follows a deficiency in supply, and up go prices—*away up*. The whole list of dairy products are of so perishable a nature, that if 1,000 factories be added in one year, the entire business would be prostrated, and a grand rush out of the business would follow.

J. R. **McLean** had been watching the butter business for several years. The Elgin Butter factory was the first to engage in the business of butter making, and people came for many miles to see the novelty of making butter by machinery. He believed the business could be overdone; but *good* butter would always bring a good price, while poor butter put upon the market, tended to reduce the price. Thought that none but good butter should be put upon the market.

I. H. **Wanzer** said that where a new creamery was established, the result was to absorb small dairies in the immediate neighborhood; did not put a larger amount of product upon the market, as many supposed, but merely made a better class of butter, which could command and maintain a better price all over the world, which was a desirable end to attain.

C. H. **Larkin** considered the dairy product no exception to the general articles of consumption. The masses of the West were liable to rush in one direction or pursuit—which seems to pay on the outside—and dairymen were no exception; therefore, the dairy business was liable to be overdone; he believed men would be more discerning in the future, and not all rush into any one business without due consideration; could really see no cause to fear that the dairy business would not continue to return a profit, if carefully and judiciously managed.

Capt. W. H. STEWART said the Western people were liable to run headlong in any one direction, but seemed of late years, to be getting a little more steady, and running a little slower; in fact, we were getting over our boyish days ; the fast ones now go West, where there is more room to expand. The steady, even way was the best; farmers must not change stock often; the trouble is, when one changes all want to change; and when all go in one direction, down go prices ; and the dairy business is no exception to the rule.

Dr. R. R. STONE thought, in comparing the profits of dairying with other agricultural pursuits, it made a favorable showing. A few years ago there were but few factories in the country, and but a small amount of dairy products produced; but few cheese were made in private dairies, which sold for five or six cents per pound, and butter sold for eight or ten cents; there was no demand, and slow sales, even at these figures; while now, with factories all over the country, at nearly every cross-road, cream cheese is selling for twelve cents, and creamery butter from thirty to forty cents. At the former time calico was selling at twenty-five or thirty cents per yard, while now it was worth only seven or eight cents. By any comparison we are able to make, it seems there is no immediate danger of overdoing the business; it is pretty well established now that a good article of butter or cheese will command a good price; could safely say the business was not running out, at least in the near future; would advise farmers to keep all kinds of stock, but always keep a few cows. Americans are fastidious in regard to what they eat. Skimmed cheese was injuring the price; as long as the product was of a good quality, there was no danger. All farmers should not rush into dairying, but move along slowly, and at all times make a prime article.

Topic No. 9—"Marketing Dairy Products—Local Boards of Trade vs. Individual and Commission Sales"—was now called for, and the discussion opened by Capt. W. H. STEWART, of McHenry county, who said: Since the factory system began, all had been in the power of commission men, whose interest it was at all times to depress the market; they were bulls and bears, running up or down, as best suited their pocket; would close you out, if low or high enough; all bought on private account more or less; country producers could not keep posted by reading the market reports, which were made by commission men; they kept agents in the country, buying up the supply, so as to "corner" the product. The commission business was not a fair business. The factory system was much the best—it was labor-saving—one doing the labor of many. Producers could be posted as to the true value of products by selling at local boards; frauds would at once be exposed, and the violators expelled from the board, and, as a consequence, both buyers and sellers are compelled to be honest and fair-dealing; no dairy products should be sold on commission, especially if of a poor quality, as it only puts a weapon in their hands with which to depress the market for your own goods.

Dr. R. R. STONE thought this was an important matter—but much more so to producers than dealers—for, as a general thing, for the past few years the dealers had not made more than a fair commission. In the commission trade a dozen factories all had cheese on hand to sell, and some were compelled, or would, sell at some price; none should be commissioned at all; the local board system is much the best commission tends to reduce the price; as a general thing commission men have no facilities for taking care of cheese, and less inclination; will always sell for what it will fetch; dealers strive to reduce the price, while the board system tends to maintain fair prices.

C. H. LARKIN wanted to know what was the meaning of "regular" and "irregular" sales, as reported by the local board.

Dr. STONE gave the desired information, by explaining that irregular sales were those which were consummated or closed after the board had adjourned, but the prices established by the board governed in all cases. The difference in prices was owing to being skimmed or full-cream cheese. The prices established by the Elgin Board of Trade were often one cent higher than the same cheese could be sold for in Chicago. The dealers were striving to break up the country boards. The Elgin dairymen and cheese makers deserve great praise for so firmly maintaining their board. The prices established by the Elgin board were fast becoming the established prices for the Northwest.

J. R. MCLEAN here made explanation as to the practical workings of the Elgin board. He said many car loads were sold off the board, but the price was fixed by the board. He here submitted the following report as the actual transactions of the Elgin Board of Trade for the year ending December 7, 1875: The board had a membership of eighty-six. About forty factories have sold their products on the board during the year. The number of boxes of cheese sold, regular and irregular, as reported to the secretary, was 86,904, aggregating 3,983,206 pounds. The whole number of pounds of butter sold during that time was 225,175. The total sales amounted to $540,399.15. Add to the above, which should have been reported as irregular, the sales of the Elgin Butter company, $12,470.72 worth of cheese and $22,131 51 worth of butter, and we have a grand total of

$575,023.38, making an average of $15,132.19 for each of the thirty-eight sale days of the year. He thought, at a rough estimate, the pecuniary advantages to the factorymen this year had been over $30,000, and believed in sustaining local boards of trade.

C C BUELL said a large number of consignments to commission men were sold to fill private orders. If any member knew of an honest commission man he would like to know his name. They have no conveniences for handling dairy products; the best of butter and cheese will deteriorate in their hands; was firmly of the opinion that no dairy product should be sold on commission.

After some further discussion the Convention adjourned, to meet at 9 a. m. to-morrow.

WEDNESDAY, Dec. 15, 1875—9 A. M.

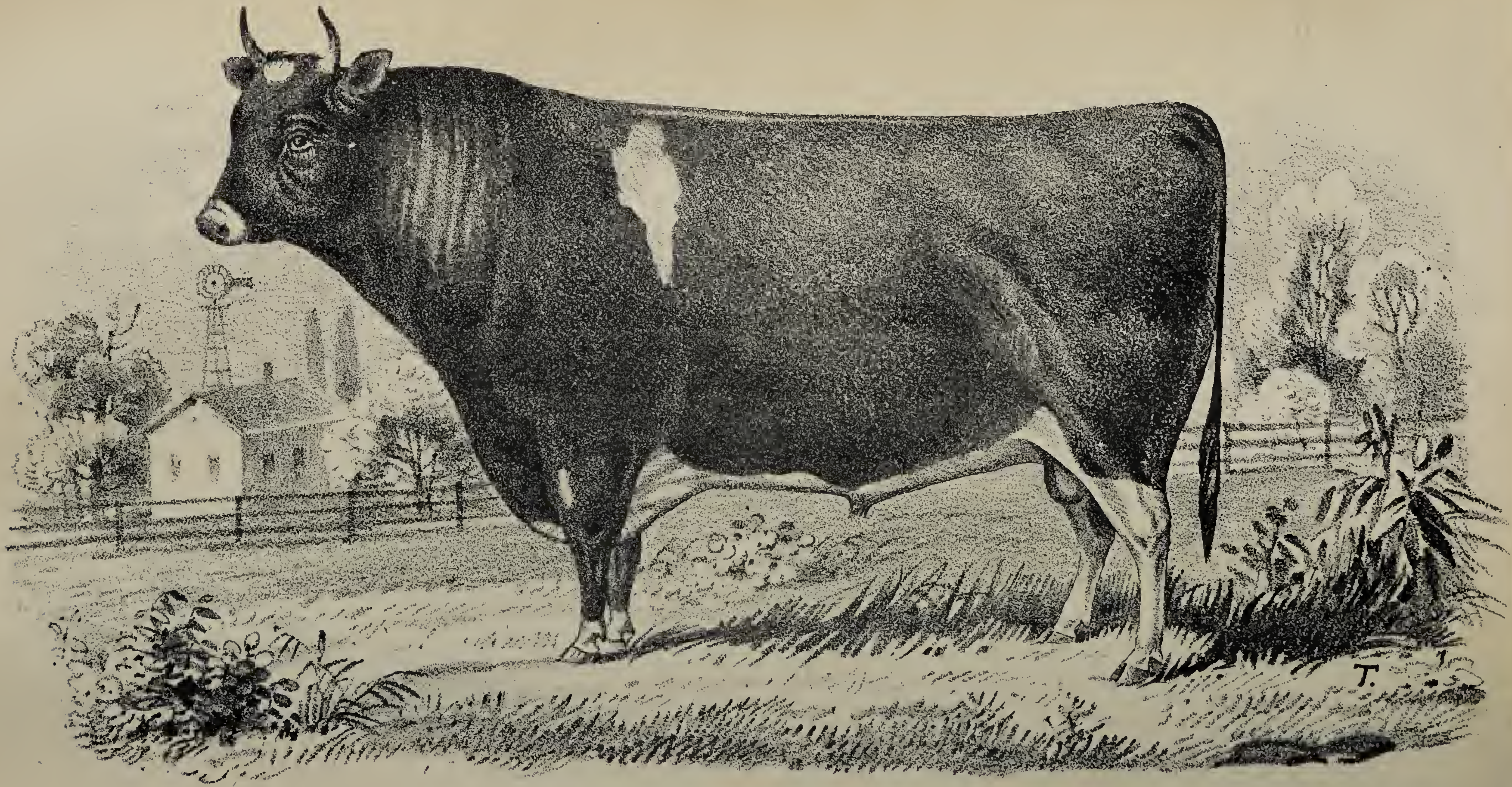
Association met, pursuant to adjournment.

Topic No. 5—" The Best Method of Keeping Up the Supply of Milk During the Summer Drought"—was now taken up and discussed, when John Keating, of Elgin, read the following address:

JOHN KEATING'S ADDRESS.

The occupation of the dairymen, like that of most other men, is subject to vicissitudes and crosses. It is not always pleasant sailing over summer seas, with flowing breezes wafting him to his destined haven. Diseases among his cattle, severe and protracted cold or wet weather, insufficient prices for his products, and lastly, but not least, the terrible droughts of summer, which he has so often to pass through, are some of the troubles and misfortunes attendant on this branch of farming.

Fortunately some of these troubles can be, if not avoided, at least greatly ameliorated, by prudence and foresight, and by obeying that maxim which bids us "in time of peace prepare for war." Dry weather is pre-eminently one of these troubles which may be provided against. Sad is the lot of the dairyman who is compelled to pass through one of our trying droughts without having made previous preparation for it, without having utilized the bountiful time of spring, the period of rain and verdure and succulence, when



JERSEY BULL.
"TAKER"
Property of I. H. WANZER, ESQ. ELGIN, ILL^s
From PRES^T GRANT'S Stock Farm, Mo.

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the abundance of nature literally runs to waste. When day after day, week after week, and even month after month, he sees the sun rise in the morning glowing with a fierce heat, climb the sky and hang at noon above his head, scorching and destroying his crops, instead of ripening and maturing them, and, slowly descending the western slope, set at evening in a cloudless sky; when evening after evening he sees his cows return from their bare pastures with a weary and careworn look, with loose and half empty udders; when, in order to prevent his herd from entirely losing their milk, he is compelled to pay the miller extortionate prices for feed,—then, indeed, will he realize the fact that the part of prudence is to prepare for drought every year, with as unfailing a regularity as he prepares for the winter season.

Having, therefore, established the necessity of preparation for drought, the question arises, In what is this preparation to consist? It is plain that we must replace that which nature denies, an abundant supply of rich and succulent food, and that this should be grown and cultivated in such a manner as will give the greatest possible amount of nutriment at the least possible expense. As to what this food is to consist of, however, opinions may differ in the East. I believe that for our State it will generally be conceded that the leaves and juicy stalks of the Indian corn is the best that we can procure. That glorious grain, which has done so much for us in the past, which has contributed more than all other cereals to the greatness of our State, will, if properly cultivated and fed, again prove our friend in dire extremity, and bridge over the abyss of drought and scarcity which sometimes intervenes between the abundance of the spring and the refreshing rains of autumn. It may now be asked, How shall we cultivate and feed it? In the first place, it is necessary to select a rich and dry piece of land. It is a waste of time and labor to plant fodder corn on poor or wet land. This land should be plowed immediately before planting, and after plowing we should harrow it repeatedly and thoroughly. By this thorough harrowing we attain two desirable objects; first, the land is put in the best possible condition to promote the speedy growth of our crop, and secondly it is in the best possible condition to encourage the sprouting and growth of the weed seeds which it may contain. Now, it may seem strange to some that I should consider the growth of the weed seeds desirable. My reason is that by inducing them to grow now, we can kill them by the million with the harrow, when they are finally disposed of. Whereas, if we only cover them up, they will sprout at a later period of the season, when we can not so easily get at them, and will in their turn produce millions of seeds to trouble us another year. The ground being thus prepared, we should drill in our corn in rows three and a half or four feet apart, in rows, if possible, running north and south, and at the rate of about three bushels per acre. My reason for planting in rows as far apart as three and one-half feet is, that I believe that experience and observation have shown that we can raise more and better corn at that distance apart than when closer. When corn is sown broadcast, or at intervals of a few inches, it grows up a weak, watery plant, can never produce an ear, and consequently is destitute of the sugar and other valuable substances which compose the ear.

Whereas, when planted at wide intervals, the stalk contains several valuable and nutritive substances, receives light and ventilation from the bottom up, which is absolutely necessary to the production of a healthy plant, and, if it should not be needed for summer use, will give us a considerable quantity of corn, and be valuable fodder for the winter. The time of planting fodder corn, with me, is immediately after I have planted my field corn. As to the kind of corn to plant, opinions differ. What we want is that kind that will produce the largest proportion of leaves with a small stalk. Sweet corn would seem to answer this description the best, but it is more expensive to procure than the common variety, and certainly produces less bulk of food per acre. I have used the common dent variety, with good results. Of the flint corn I have had no experience. A few days after planting, and before the corn has come up, we should go over the field with the "Thomas smoothing harrow;" this will kill the weed seeds which will be sprouting by millions. We should repeat this harrowing every two or three days, until we see the rows, when we should start the cultivator and follow with the smoothing harrow. The cultivator should be kept going as late into July as possible, and the smoothing harrow can be used with profit until the corn is four or five inches high. We may pull up or cover some corn by using the harrow as late as this, but the profit that we will derive from its use will by far counterbalance the loss. The best time to cut the corn for summer use is after it has blossomed, and just before it forms an ear. The stalk, at this stage of its growth, contains all the valuable substances which enter into the composition of the ear, and is more valuable for feed than if cut at an earlier period. It is desirable to cut the corn some hours before we feed it, and suffer it to wilt, by which means we get rid of a great quantity of water. I have remarked that cows eat it more readily when thus wilted, probably from the fact that fermentation of the juices has proceeded to some extent. I have practiced feeding my cows a full feed of fodder every evening after milking. In the morning I give them a little bran. I think it is better to feed in this manner than to give our cows, as some do, two half feeds a day. The cows fed on this latter system, not being satisfied in the morning, and expecting another feed, will loiter around the fences expecting the evening meal. When, if they knew they would get a full feed in the evening, and not until then, they would in the morning get what food they could from their pastures. Moreover, the bran is quickly eaten in the morning, and the cow reaches the pasture while the dew is on the grass, and before the intense heat of the day sets in.

Water for our cows, water in abundant supply, clear, cool and fresh, is as essential to keeping up the supply of milk during drought, as food, or even more so. We may feed our cattle on the greenest of corn fodder, we may give them bran and meal, we may take all possible care of them, but if they have not water conveniently situated, so that they can drink when, where and as often as they please, all our efforts will be in vain. This is a very important matter, and should not be neglected. In dry, hot weather, cattle require more water than ordinarily, and will suffer intensely if deprived of it. Sheds in our pastures is, I think, another aid to success in dairying during a dry time. I know that this will be disputed. I have heard men say that sheds made the cows so lazy that they would not eat. But I can not believe that the cows who have during the long summer's day suffered from the burning beams of the sun, or the attacks of voracious flies, will yield as much milk as those who, after eating their full, can retire to some shady dell and there chew the cud of contentment and happiness.

Green corn, with a little bran, clear and abundant water, with sheds in my pastures, are the allies which have enabled me to cope successfully with the five successful droughts which we have so lately had. And from experience and observation I firmly believe that the dairyman will find these means amply sufficient to enable him to keep up his supply of milk during the summer drought.

Dr. Stone moved that a committee on finance be appointed, whereupon the chair appointed, as such committee, R. R. Stone, E. H. Seward, and Jackson Wood.

On motion of the same, Dr. Tefft, M. H. Thompson and R. P. McGlincy were made a committee to revise the constitution of the Association.

On motion of E. H. Seward, a committee on nominations was appointed, consisting of D. Severy, S. N. Wright. H. W. Mead, C. H. Larkin, and I. H. Wanzer.

The discussion of Topic No. 9 was again resumed.

C. H. Wilder, of Wisconsin, believed the local board system the best plan to dispose of dairy products; thought the boards should be kept up at all hazards; they had failed in Wisconsin for lack of general interest; it is to the interest of the dealer as well as producer; dealers could afford to pay more on the local boards than at the factories; saved them much time and expense in canvassing the country for a supply. He had shipped cheese direct to Europe; it had heated on shipboard, and damage ensued. By far the best plan was to sell at home, where no differences as to shrinkage or weights can come up.

Topic No. 4—"The Best Plan to Avoid the Low Prices which Usually Prevail for Butter and Cheese During the Summer Months"—was now taken up, and the discussion opened by Judge Wilcox, of Elgin, who said he really could say but little on the question, for it resolved itself into the best plan to make money. Believed it the best plan to make less milk during the warm weather. Was in poor health, and could say but little now, but would speak again after Mr. Seward, who had made it a study.

E. H. SEWARD said it was a hard question to manage; we all wanted to secure the same end, but the question was, How shall we do it? It would be a great blessing to dairymen if the low prices of the summer months could be avoided. The best remedy he knew was for all to make a good article, which always brought a good price. Our products are graded, fair and prime, none *extra;* all factories should make better cheese. Dairymen should make less milk in May, June and July, and make more in winter, when the price is usually higher.

Judge WILCOX said the question of quantity depended so much upon circumstances, it would not do for all localities to rush into winter dairying. Our factory system was not the most profitable way to work up milk; dairymen could make more money to work up their own milk; it is forced work and contrary to nature to make milk in winter. By working up on the farm, hogs and calves could be raised, which would suppress the killing of all the calves as now practiced; we are now compelled to scour the country, far and near, to supply our dairies with fresh cows; they should all be raised, and thereby keep up the standard of our dairies. Where milk could be sold during the whole year it would do to follow winter dairying, but all could not rush into winter dairying, as a large amount of product rushed upon the market at any one time as a matter of course depresses the market; the demand will at all times control the price; undoubtedly it was best for the whole country to make the most during summer months, but the product should be made prime at all times.

On motion of Dr. Tefft, it was voted that when we adjourn it be to meet at 2 p. m.

The regular order of business was now suspended, in order to take up and consider a report submitted to this association by a committee appointed by a local dairy association, upon a communication written by L. B. Arnold, of Rochester, N. Y., and printed in *The Prairie Farmer*, of August 28, 1875.

On motion, R. P. McGlincy was requested to read to the convention the communication referred to, after the reading of which, G. P. Lord, in behalf of the committee, now read the report, which was submitted to the convention for its consideration.

Judge **Wilcox** did not like the report, especially the closing; did not like to compliment any one who had spoken so disparagingly of Western milk; said Mr. Arnold's experiments amounted to nothing; he gave no results as to his Eastern experiment, not even where it was made; Mr. A. was a visionary man; one experiment could establish nothing. Could any man of good sense condemn the milk of a whole country upon such an experiment? Mr. A. came to Elgin to experiment, made a failure, and must have some escape, so he theorizes on "sloughs," "stagnant water," "local enemies," etc. No one experiment could establish a fact; it should have taken many experiments and much research to establish a fact so important as this; did not believe Mr. A. was sufficiently posted as to our country, its water, soil, and general adaptability to dairy purposes, to warrant any such wholesale condemnation of Western milk; his visits to the West had generally been in the winter, when the ground was frozen and he could see nothing; believed Mr. A. would regret the position he had taken; it was untenable, and he could not maintain it by any fair course of reasoning; did not wish to be personal; had no unkind word for Mr. A.; it was only his theory he wished to combat, and which every dairyman in the West should deem it his duty, as well as privilege, to resent.

G. P. **Lord** said none of the committee defended Mr. Arnold or his position, as he had attacked Western milk—

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not Elgin milk—and for this reason the committee deems it best to refer the matter to this State Convention; the man is gone, we must demolish his theory; the experiments were mere failures; did not wish to get into a conflict with Mr. Arnold, but as his theory had become world-wide, it ought to be demolished.

C. C. **Buell** counseled moderation; was inclined to be for "the under dog in the fight;" thought it best not to be too hasty; demolish the theory, and let the man alone; would say nothing disparaging of Mr. A., as all are liable to err; was pleased with the report; did not deem it best to make it more pointed.

On motion, the report was accepted.

The convention now adjourned, to meet at 2 p. m.

Wednesday, Dec. 15, 1875—2 p. m.

Convention called to order.

Judge **Wilcox** wished to be understood that in what he said with regard to Mr. Arnold's charge against Western milk, he did not wish to impeach Mr. Arnold, but merely spoke in self-defense as a Western dairyman.

I. H. **Wanzer** being called for, said he was satisfied with the report, but could not indorse it in full.

G. P. **Lord** said as the charge was in no sense local, he would like to hear from those abroad.

C. H. **Wilder**, of Wisconsin, was satisfied with the report read, as it completely refuted Mr. Arnold's theory, and that was what we wished to accomplish; should in no way reflect upon Mr. A.

Judge **Wilcox** did not deem it wise to regard Mr. A. as authority in dairying, as his sweeping charge against Western, as compared with Eastern, milk was all based upon one single experiment; it was a matter of great importance, and should be candidly and impartially dealt with.

G. P. **Lord** here criticised the Arnold communication, as printed in *The Prairie Farmer;* did not consider his theory as amounting to anything; his statement as to the poor keeping qualities of Western milk was a mere assertion, substantiated by no proof whatever; he believed Western milk would keep as long as any milk, if let alone. Mr. Arnold's charge would not hold together, as he admitted that butter made by I. Boies & Son, of Illinois, brought thirty-three cents per pound, while the best Eastern butter was worth but thirty cents in the same market, Western Milk actually producing butter worth three cents per pound more than Eastern milk. Animal heat was expelled by cooling, not by heating; a beefsteak from warm meat, before the animal heat had been expelled, was not fit to eat, and the same rule would apply to all meats; believed the theory of expelling animal heat from milk by heat was a farce.

Dr. J. **Tefft** here gave explanation as to how the microscopic investigations were made. Said he furnished the instrument, also examined the samples of milk, but saw no foul or foreign substance; believed the "local enemies" seen by Mr. A. to have been caseine caused by the acidity of the milk.

Dr. R. R. **Stone** had objections to the Arnold letter; thought Mr. A. an enthusiast; we were too apt to believe all the Eastern men tell us, and often to our sorrow; the theory of expelling animal heat by steam was all a myth; the idea first originated in the fact that a lumberman kiln-dried his lumber by steam, and why not cure cheese by the same process? Eastern men with Western ideas are dangerous characters.

D. C. **Scofield** said Mr. Arnold referred, in many places in his letter, to the fungoids which are only found where stagnant water is used by the dairy, and which nothing but scalding would kill, when the truth was the samples of milk examined were from dairies which could not have possibly had access to any stagnant water; it was a charge which could not be sustained; good milk should not be tampered with.

On motion, a committee of five was appointed, consisting of L. C. Ward, G. P. Lord, C. H. Wilder, C. H. Larkin, and E. H. Seward, to consider the whole matter of the Arnold letter and the committee's report, and report their conclusion to this meeting at 10 a. m. to-morrow.

Topic No. 8—"The Manufacture of Skimmed Cheese—Is It Injurious or Beneficial to the Dairy Interest"—was now taken up, and the discussion opened by **Chas. Baltz**, of Chicago, who delivered the following address:

CHARLES BALTZ'S ADDRESS.

The manufacture of milk into both butter and cheese is injurious and unprofitable to the dairyman, as it injures him in the long run, and would, if abandoned, give place to a more remunerative avocation. The early history of cheese making, dating back to 1825, and its rapid growth in this country, in New York, Illinois, Wisconsin, Ohio, and east to Vermont and Massachusetts, is well known by our elder dairymen. The introduction of our factory system in England has met with such success and favor that Russia has sent her agents to England to borrow the idea we planted there. With such a reputation for our American cheese, it it not evident that we should wish to maintain it? But the question arises here, Are we making such cheese now as will warrant our maintaining it? I answer, No. Examining the question closely, we will begin at home, in Illinois, where we will find plenty of material for discussion. What has been our experience during the past season? We find that cheese has shown a weakness somewhere. We are already beginning to lose our fair reputation. Skim cheese is beginning to flood our market. Factorymen have had the skimmer in hand, and have been making skim cheese and butter; and this has not been done in several factories, but in almost every factory in the State. What reason do they give for this? Factorymen drive each other to it. I have often asked the factorymen why they skim. The answer is, We are obliged to do so; the factory in this or that neighborhood skim, and we are obliged to do the same or lose our patrons. But does it pay? We have now invested in this country about $24,000,000 in working facilities alone, and this would be all a dead loss to dairy husbandry should the factory system go down. We now place upon the market annually a product worth one hundred and sixty millions of dollars. With such an investment, bringing such a result, we should be very careful that our foreign demand and reputation should increase instead of diminish. Otherwise it will be an unsafe investment. When the factory business was first started, each factory tried to place upon the market the best cheese. Now, where the rivalry for milk is sharp, each factory tries to outdo its neighbor in declaring larger dividends than his brother factory-man.

The only way I can see to further the manufacture of good or full-cream cheese, is to point out some way by which more money will come back into the milk producer's pocket for each gallon of milk he brings to the factory, than he obtains by the manufacture of both butter and cheese from the same milk. It is unwise, in my estimation, to legislate in this matter. I contend that much better profit on milk can be made than by the unwise plan of skimming the milk and manufacturing butter and skim cheese. While it leaves some doubt as to the future success of the creamery system, I am free to state that the ruin of our cheese demand at home and abroad will be the result of this skimming, unless a different plan is adopted. If the creameries were confined to one or two factories, the fault might be overlooked; but it does not rest with one or two, and not until seven or eight thousand infest the land will the dairyman become wise to his own injury. Where butter is made, that should be made alone. The sour milk can be used for sour-milk cheese, which is in good demand, at a fair profit. To illustrate: One hundred gallons of milk will produce 33⅓ pounds of butter; 33⅓ pounds, at 35 cents, amounts to $11.66. Sixty pounds sour milk cheese, at 12½ cents, $7.50. Total, $19.16. While I consider these figures as nearly correct as possible, there may be a wide difference in the richness of the milk, which varies largely in different localities, and from the different breeds of cows. I can not, therefore, bind myself to come up to these figures in all cases, but the sour milk can be worked into cheese and sold at prices as given, and it is done at the present time; and if it can be done elsewhere, it can be done here in Illinois. While it may not reach perfection the first year, it is possible to reach perfection. Each butter factory can have a cheese factory conducted with it at a very small expense. The room for working up the same milk need not be so large nor so expensive but that every butter factory can have it.

I further propose to show that full-cream cheese can be made profitably. One hundred gallons of milk will produce one hundred pounds of cheese, which, at 13 cents per pound, is $13. It will produce besides fifteen pounds of whey cheese, which will sell at 12 cents—$1.80; total, $14.80. Whey cheese can be made at small expense in connection with a cheese factory, and by careful management much more will be obtained from the milk than by making both butter and cheese from the same milk. To illustrate the latter: From one hundred gallons of milk eleven pounds of butter, at 35 cents, $3.85; sixty-seven pounds skim cheese, $8.04. Total, $11.89. Balance in favor of full-cream and whey cheese, $2.91. Butter and sour milk cheese, $7.22.

While there is a wide margin in favor of honesty and full-cream cheese, there seems to be no necessity to run into creameries. Instead of grasping for a small gain, as seems now to be the case, I think it would be more satisfactory for the milk producers to adopt this more paying and more solid plan. We are obliged to import large quantities of cheese from Switzerland and Holland, for our American trade, which could as well be manufactured in our own country if the same care and attention were given the different departments of the dairy as they receive in those countries.

I. H. **Wanzer** then read the following paper on "The Manufacture of Skimmed Cheese:"

Gentlemen: In undertaking to discuss this question, we shall take the ground that great injury is being done to our dairy interest, and try to suggest a remedy, in hope that what I may say will tend to excite thought in the matter before us. Twelve years covers the most of our experience as dairymen in the West, and a great part of that time has been occupied in battling with difficulties incident to our soil, climate and water. We were not long in finding that different manipulations must be employed to bring about the same results that our Eastern brethren obtained, and to whom we have learned to look, in our infancy in the business, for counsel and advice, and not until we had worked out a system adapted to our peculiar wants, did we meet with success. And just as we had begun the manufacture of goods which met with favor in the markets of the world, we commenced robbing our milk of that essential element for the manufacture of good cheese, namely, the cream; and we are, to-day, skimming our milk to such an extent that already a cloud has been cast upon our title to being good cheese makers. We are checking consumption by sending out an article of cheese unfit for human food; we are fast driving buyers from our markets, because they can not rely upon our goods. Although they bargain for the genuine good cream cheese, they are sure to get a large amount of skimmed cheese mixed with the good.

If these things be so, what must we do? My answer would be, that where cheese is made, let it be full-cream, and where butter is made let there be no cheese made. But, of course, this plan will not work, unless it be profitable to do so, for the money is what we are after. I have visited creameries in the State of New York, located within six miles of each other, the one running butter and skimmed cheese, the other butter alone, feeding the sour skimmed milk to calves and swine. The factory which made no cheese paid the largest dividends; and I did not consider that they, in their way of feeding the skimmed milk, obtained the full benefit of it. The discoveries there made confirmed my previous ideas, but not until the past summer have I been able to conduct experiments to settle in my own mind whether such a course would succeed in the West. I am now fully persuaded that there is more profit, and certainly more pleasure, in conducting our creameries without making cheese. With a view of finding out the value of skimmed milk fed to calves and hogs, I made the following experiments: On the 10th of November I took five calves, whose aggregate weight was 557 pounds; at the same time I put up five shoats, whose weight was 487 pounds. The calves drank in thirty days 420 gallons of skimmed milk; the hogs drank in the same time 480 gallons; the gain in hogs was 177 pounds, on calves 300 pounds. Calling the hogs worth 6 cents per pound, it makes the milk worth 2¼ cents per gallon. Calling the growth upon the calves 4 cents, it would make the value of the milk fed to the calves, 2¾ cents. With these and kindred experiments, I place the value of skim milk at 2½ cents per gallon.

With a view of ascertaining what the gain would be in butter, where the milk was allowed to set and sour, over what it would be if it was kept at a temperature where it would not sour, as it has to be for making cheese, I tried experiments at three different times. The first was in September. I divided 644 gallons of milk into two vats. One I kept so cold that at the end of forty-two hours it was perfectly sweet, and then made it into cheese. The other I held at a temperature so that it began to sour in twelve hours, and in twenty-four hours was quite sour, and at the end of forty-two hours was quite thick. The cream from the sweet milk yielded me eighty-two pounds of butter. The cream of the sour milk yielded 111 pounds, an increase of twenty-nine pounds, showing the value of the increase of butter to be one cent per gallon. Two other experiments were made, one in October and the other in November, with like results, not using so much milk, but the increase was proportionally high. Now, having settled the matter in my own mind from these and kindred experiments, the value of the increase of setting milk at a high temperature, also in establishing the price of the skimmed milk, and am better prepared to figure the advantages of the no-cheese-making system, and let us see how I come out. The average price of my cheese, take the year through, is 6 cents per pound, and it averages as well as anybody's, who sets milk as long as I do. It costs me 2½ cents per pound to manufacture, box, ship and sell, reducing the cheese at once to 3½ cents, and as it takes 1½ gallon of skimmed milk to make one pound of cured cheese, and that 1½ gallon of milk is worth 3¾ cents, which is more than the cheese would bring, beside giving an increase of one cent per pound on the yield of butter.

Now, having done away with cheese making in my mind as far as profit is concerned, let us see what else I have gained. 1st, I have nearly doubled the capacity of my factory for setting milk, by putting out the cheese fixtures. 2d, I have got the stench which always accompanies the manufacture of cheese out of the building, and consequently can come nearer perfection in my butter making. 3d, One-half of the money will build and equip a creamery proper, which it requires to build and equip one combined. 4th, One-fourth of the water and ice only is requisite where no cheese is made, consequently creameries can be successfully carried on with a well or a small flow of spring water.

In making cheese and butter in the same building, we are constantly sacrificing one for the other, and often in trying to get the best results in cream-raising, lose our milk entirely. As we do not make preparation to feed the milk, we of course lose it, and as milk and cream are so ready to take up the impurities in the manufacturing building, we are constantly bringing it in contact with the foul odors that are always present where cheese is made in the best regulated factories. In my constant efforts to avoid this sacrifice, with their results, I am reminded of a conversation I once heard in the mountains of California between two gamblers. One was trying to get the other to tell his history; finally, upon agreement, he did. The history of the one that I have been reminded of was like this: He was born of slave-holding parents, in one of the Southern States, was well educated, graduated with honors at a certain college, and must have to settle upon a profession. His father wanted him to become a lawyer, but his mother was determined he should be a minister. And, said he, between the two they made a fool of me.

How often do I hear the complaint conveyed in these words: I like your creamery butter, but before I get a package used up it gets frowy. And then they say there is a lack of consistency in your creamery butter; it is too oily. These are the two most frequent complaints that I hear. The cause, I think, of the first complaint, is, as I have said before, in the bringing of our milk and cream into close contact with manufacturing and press rooms. The cause of the other complaint is, that where we only get the first part of the cream—the largest and richest globules—the butter made therefrom is more oily, and lacks that waxy consistency that characterizes butter made from all the cream, as any one can demonstrate, as I have done. Take the cream that rises the first twelve hours, and manufacture into butter. Take the cream that will rise the next twelve hours and make it into butter. Now take two lumps of butter, of the same size, one from each, and place them in a warm room. The butter made from the first cream will be melted to oil, while the other will retain its form, proving to me that the whole cream is needed to make a perfect butter. And this cream and milk must be handled in a pure atmosphere to bring about the last result.

Although the word has gone out at the East that we handle milk with an enemy in it, and although it has been proclaimed broadcast in our land that perfect butter and cheese can not be made in the West on account of stagnant pools, eddies and sluggish streams, yet the facts in the case have gone far to prove to the contrary; and if we will stop this skimming *now*, we honestly believe that we will carry the palm from all the world beside. We have got the country bountifully supplied with every requisite to successful dairying, and we also think that a speedy departure from our mixed system of making butter and cheese will redound to the interest of better cheese and butter.

The Committee on Revision of the Constitution made the following report:

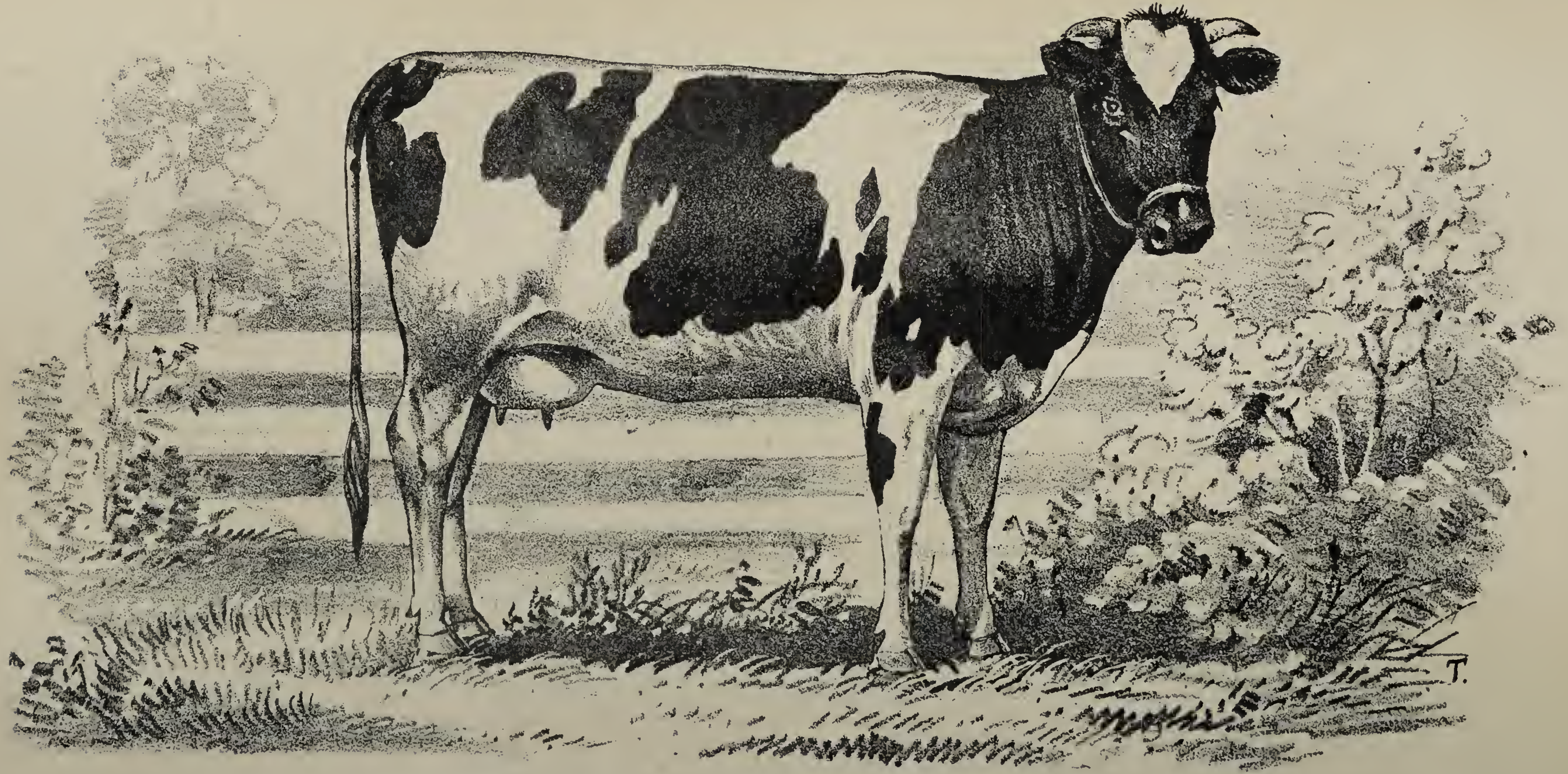
"That Sec. 2 be so amended as to read: The officers of this association shall consist of a President and three Vice Presidents, a Secretary and Treasurer. There shall also be elected, or appointed, three Trustees in each county of this state represented, or that may hereafter be represented in the convention, who shall be charged with the interests of the Association in their respective counties, and whose further duty it shall be to report to the officers of the Association annually, or oftener, if required, the statistics of the dairy interests in their respective counties.

"SEC. 3. The officers of this Association shall be elected by ballot, no member being entitled to a vote who has not paid his initiation fee for the year.

"ARTICLE 9. The Association shall have full power to make such Rules and By-Laws as shall be deemed advisable.

[Signed]
"JOSEPH TEFFT,
"M. H. THOMPSON, } Committee."
"R. P. MCGLINCY,

On motion, the report was accepted, and by the provision



IMPORTED HOLSTEIN HEIFER.
"WINIFRED"
Property of F. W. WRIGHT, ESQ. ELGIN, ILLS
Age 2 Years & 8 Months.

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of the Constitution, was laid over for one year for final action.

Topic No. 8 was now further discussed.

Dr. TEFFT said the trouble with skimmed cheese was that it was not fairly put upon the market. Ohio cheese went begging a market, and we were drifting in the same channel; full-cream cheese always found a ready sale, at good prices.

ISRAEL BOIES, of Marengo, said he had heard it said of a traveler at a public house, when skimmed cheese and butter were on the table, that he took a slice of the former and spread the latter on it, saying, "come together soul and body, and cursed be he who first separated you," and skimmed cheese has been cursed ever since.

D. SEVERY, of LaSalle county, gave his evidence against skimming. Said skim deep or not at all, then no one would be deceived; believed skimmed cheese hindered consumption, and therefore was injurious to the dairy interest.

The convention now voted to hold an evening session, and adjourned to meet at 7:30 p. m.

WEDNESDAY, Dec. 15, 1875—7:30 P. M.

Convention met, as per adjournment, when the discussion of Topic No. 8 was again resumed.

Dr. R. R. STONE thought a little more money could be made for the present by skimming, but in the long run it would prove disastrous; there was always a demand for good creamery butter, and will increase as the quality increases; if butter is made alone and cheese alone, it would be better. Had no definite figures to give as to relative profits, but upon general principles, was against the manufacture of skimmed cheese.

H. W. MEAD, of McHenry county, had practiced skimming because he believed it the most profitable for the present, but believed its reaction would be injurious to the business; had sold his butter for from thirty-one to thirty-three cents; had his skimmed cheese on hand yet; could tell skimmed cheese in the dark, by the feeling; was compelled to skim or lose his patrons, as other factories were pursuing the same practice; dealers would buy it, and so they made it; each factory made a little more for fear his neighbor would make a little less. Makers should brand their cheese as to quality, whether full-cream, skimmed, or partly-skimmed; could see no other remedy.

J. R. McLean did not believe it the best policy to pursue; might pay now, but in the end it would not prove satisfactory.

Dr. Tefft did not fear the full-skimmed cheese; it was the partly skimmed to be feared, as the buyers would buy it for what it was and sell it for full-cream cheese, thereby reducing the standard of our cheese; the practice would certainly ruin our market; he believed the best remedy was to skim it to death, so that no one would be deceived by it.

Dr. Stone thought branding would not save us, as the brands could be so easily erased, removed, or avoided.

G. E. Morrow thought resolving would not remedy the evil; could see no direct remedy; thought partly-skimmed the most injurious.

Dr. Tefft said cheese loses, in curing, much of its flavor. American, as compared with English cheese, loses in water about five per cent. more than Cheddar, while the Cheddar loses in cream about three per cent. more than American. English cheese retaining more water, is therefore richer and more profitable.

Judge Wilcox thought it difficult to palm off a skimmed for a full-cream cheese, but the best way was the fair way; Illinois made as good cheese as New York, but could not sell for as much; this evil could not be remedied as long as skimming was done; if skimmed at all, it is a fraud; thought this Association could, in a measure, remedy the evil by resolution, squarely placing itself against the practice.

E. H. Seward said the practice was for all the factories, in early spring, to flood the market with skimmed cheese, which of course run down prices; thought a resolution condemning the practice, passed by this Association, would help to remedy the evil.

G. P. **Lord** said if it was a fact that skimmed would last longer than full-cream, it was most certainly injurious, as it clogged the wheels of consumption of cheese, and all would go down together; the practice would react upon us; any article adulterated at all, is supposed to be reduced more than it really is; if reduced ten per cent., the buyers think it is certainly twenty per cent. and deal accordingly; all manufactured goods should have the name of the maker plainly marked upon them, then they can stand or fall upon their merits.

Dr. **Tefft** thought all cheese should be branded with the maker's name, also the grade of cheese, then it could stand or fall as it was worthy.

It was now voted to discontinue the further discussion of Topic No. 8 until to-morrow.

Topic No. 12—"Large and Small Dairies—Which Are the Most Profitable?'—'was called for, when **Israel Boies**, of Marengo, said it was a hard question to decide, as so much depended upon circumstances; his opinion was that from twenty-five to thirty cows in a single dairy could be made to yield, all things being equal, more than a larger number; kept a large dairy himself, and did better than many of his neighbors who kept small dairies; fifty cows are enough to keep together. By soiling, double the amount of milk can be produced, and of a better quality; where dairies are small, the cream often is kept too long to produce a good article of butter. The larger the dairy the more care needed to get a fair return; upon the whole, it was a hard question to decide, with the doubt in favor of small dairies.

G. E. **Morrow**, of Chicago, thought a great deal depended upon the man; fully as much as upon the size of the dairy;

one person could handle a small dairy with profit, while he would be shipwrecked with a large one, and vice versa, but the finest results are in the main from small dairies. Said a Mr. Sargent, of Sheboygan county, Wis., kept six or seven cows, and the product of butter was so purely *gilt-edged*, that it was sold in the market for $1.15 per lb. All could not do this, but could do better than they are doing; all should not engage in dairying—should keep some cows, steers, hogs, etc. Elgin was an exception, owing to its favorable location as to a variety of markets. For those who live remote from a factory, it is poor business, especially for dairies of fifteen or twenty cows, it does not pay; the time consumed in going to market would make it up at home; the great difficulty with large dairies was to secure reliable help, who could and would take an interest in the business; poor milkers soon ruined a dairy; so much help could not be profitably employed while not milking.

I. Boies did not find any difficulty to keep his men at work; the trouble was he did not keep help enough to work his farm well; kept six men, and ought to keep more.

J. R. McLean thought dairymen worked their help too hard; and made too long days; it was killing business; had broken down himself by hard work and too much of it

Dr. Tefft thought old age, and not hard work, was the cause of many of us breaking down; did not believe hard work, in moderate doses, would hurt any one.

The convention now adjourned, to meet at 9 a. m. tomorrow.

Thursday, Dec. 16, 1875—9 a m.

Convention called to order, as per adjournment, and on motion, the chair appointed I. Boies, I. H. Wanzer, and D. C. Scofield a Committee on Dairy Utensils, to examine the implements on exhibition, and report to this meeting.

The discussion of Topic No. 8 was again resumed.

I. BOIES thought skimming a poor practice; said skimmed cheese was to full-cream cheese what stump-tail currency was to sound currency; the practice ought to be prevented by statute provision; should not split the milk; food from sour milk was good; skimmed cheese was not good; we ought to petition the Legislature to pass a law compelling makers to brand their cheese, on the bandage, as to the true article; the petition should start from Elgin, this being the head center of the dairy interest of the State.

G. E. MORROW said Ohio stood at the head as a skimmer, and had suffered thereby; Illinois is probably worse than Wisconsin; Sheboygan county was No. 1 in Wisconsin; no no county was so uniform in their make and quality; could be recognized at sight, owing to uniformity; Illinois is getting the name of doing a great deal of skimming, and it will ultimately do us much damage.

Judge WILCOX offered the following resolution, which was adopted unanimously:

Resolved, That the making of skimmed or partly-skimmed milk into cheese is detrimental to the dairy business. It tempts and facilitates cheating, makes it practicable for the dishonest to sell, as good, an inferior article of cheese, and thus impose upon the consumer. This impairs confidence in all cheese manufactured in the region where the skimmed-milk cheese is made, damages the reputation, diminishes its consumption, lessens its salability, depresses the market price, and results in the end in loss to the milk producer and cheese manufacturer. Therefore, it is the judgment of this convention, that the best interests of the dairy business of this State demand that making skimmed-milk cheese should be discontinued, and full-cream cheese only should be made.

ISRAEL BOIES offered the following resolution, which was carried:

Resolved, That we petition our Legislature to pass a law requiring manufacturers to brand all cheese made, so as to indicate whether skimmed, partly-skimmed, or full-cream; brand to be on the bandage and with indelible ink, also the name of the maker to be stamped on the cheese.

G. E. MORROW suggested that a committee be appointed to prepare a bill in accordance with the above.

Judge **Wilcox** was in favor of a committee; the laws we now have are inoperative, and of no use; had been nullified by Supreme Court decisions; should be made safe and secure.

On motion of Dr. Tefft, a committee of five was appointed to draft a bill in accordance with Mr. Boies' resolution, and on motion of Capt. Stewart, it should also be a part of their duty to suggest such amendments to the existing law for preventing the aduleration of milk as to make it effectual.

The chair appointed as such committee, Judge Wilcox, Dr. Tefft, G. P. Lord, W. H. Stewart and I. Boies.

The hour of 10 having arrived, the special order was now taken up, when G. P. Lord read the following report, which was unanimously adopted by the convention:

To the Members of the Illinois State Dairymen's Association:

Gentlemen—Pursuant to instructions, your committee have carefully examined an article in *The Prairie Farmer*, of August 7, 1875, in which—under a title of "New Departure"—the writer notices the failure in the heating of milk made at Elgin, in June last, under the supervision of Mr. Arnold, of Rochester, N. Y., who had advocated that theory of treating milk in his address before the Northwestern Dairymen's Convention in February, 1875.

Your committee have also examined Mr. Arnold's reply to that article, which was published in *The Prairie Farmer*, of August 28, 1875.

Your committee would state that they are informed that the experiment of heating milk at the Elgin Butter factory, referred to in these articles, was made without the knowledge of the Elgin Dairymen's Association; that they were not parties to it; that it was a private arrangement between the parties. and that the experiment and the report of the failure was a matter with which the dairymen of the West had nothing to do, and your committee can not but regret that Mr. Arnold, in his reply, should have made statements that are liable to injure the dairy interests both of the East and of the West.

Your committee find that Mr. Arnold, in his address before the Northwestern Dairymen's Convention, in February, 1875, after advocating his theory for heating milk, stated that "when milk is in all respects sound and right that it is better to let it alone than to tamper with it." [See printed report of N. W. Dairymen's Convention, page 23.]

In the articles published in *The Prairie Farmer*, before referred to, Mr. Arnold notices two experiments in the heating of milk by which he proposes to test the qualities of Eastern and Western milk—one in Elgin, the other somewhere in New York.

In the experiment at Elgin, "287 gallons of milk, treated by Mr. Wanzer in his usual method, produced sixty pounds of butter. The milk was then sweet, and was used for making a good skimmed cheese, which was worth seven cents per pound. This process utilized the entire milk. The same quantity of milk treated by Mr. Arnold, by heating, yielded but forty-eight pounds of butter, leaving the milk sour and worthless." [See report in *The Prairie Farmer*—under title "New Departure"—of August 7.]

The other experiment was in New York, "where a vat of 450 gallons of milk, heated to 130 degrees, kept sweet for thirty-six hours, when the weather was so warm that it only fell to ninety degrees in twenty-four hours, from which was made more butter and better cheese than from an equal quantity of milk cooled to sixty degrees." [See Mr. Arnold's letter in *The Prairie Farmer*, of August 28, 1875.]

If these experiments prove anything, they would seem to prove that Western milk was sound, for the reason that it produced the best results when let alone, when it was not tampered with by heating; and that Eastern milk was unsound, for the reason that it produced the best results by being tampered with—by heating.

But your committee do not adopt any such views. They believe that both Western and Eastern milk is entirely "sound," and that when treated on well-established principles of curing and handling, the butter and cheese made from it will be of a quality that can not be excelled.

Mr. Arnold states, in his article, that a failure, if it results in a search after the cause of the perishable nature of milk, will be more valuable than a success, and here your committee have to notice the microscopic examination of milk referred to by him. Dr. Tefft furnished the microscope, and ten or twelve different samples of milk were subjected to the scrutiny. Mr. Arnold states that he found "three distinct species of fungoid plants which were easily recognized as the products of stagnant water, and had evidently come from the cows drinking from sloughs or pond holes, or stagnant eddies." This, if we understand Mr. Arnold, accounts for the failure in his experiment.

In reply to this, it may be stated that the milk examined was from the well-known dairies of Frank W. Wright, Dr. Joseph Tefft and I. H. Wanzer, and all of these gentlemen assert that there are not "ponds, sloughs, or other stagnant water" in their pastures. Mr. Wright says his cows drink water that is daily pumped from a pure well, and Dr. Tefft and Mr. Wanzer state that their cows drink water from a pure spring brook.

It seems to your committee hardly possible for Mr. Arnold to have discovered, with the aid of the microscope, the true cause of the failure of his experiment, as it could not have come from stagnant water drank by the cows that furnished the milk for the investigation. Dr. Tefft, who has long been familiar with the microscope, did not at the time agree with Mr. Arnold in regard to the things seen by the microscope. His view was that it was the formation of caseine or curd in the milk, and its wonderful growth in so short a time, "across the whole field of vision," did not much surprise Dr. Tefft, for he knew that that occupied a space scarcely larger than the point of a pin; and that therefore a very minute particle of curd would cover the field of vision.

Your committee are of the opinion that Mr. Arnold did not, with the aid of the microscope, find the true cause of the failure of his experiment; that it was not caused by fungoid growth, as stated, and they are confirmed in their opinion by the fact that but a few days after the examination made by Mr. Arnold, Dr. Tefft and the Hon. O. S. Bliss, Secretary and Treasurer of the Vermont Dairymen's Association, examined, with the microscope, the milk of the same cows as those examined by Mr. A., and they found no impurities in the milk.

Your committee is further confirmed in their opinion that Mr. Arnold's failure is not to be attributed to impure water, by the fact that Dr. Stone and Gould made the experiment in heating milk at their factory in Algonquin, last winter, when all ponds and sloughs were frozen solid, and the cows could get only pure water, and they assert that the milk soured in a very short time, and no valuable results were attained by the experiment.

The committee find, in the Fifth Annual Report of the Vermont Dairymen's Association, October 21, 1874, page 158, a statement by Mr. Hovey, of Vermont, who says: "Mr. Cheever scalds his milk as soon as it comes from the stable, as recommended by Mr. Arnold; that he sent his butter to a dealer in fine qualities of butter in Boston; that the dealer's customers found fault because the qualities *varied*, owing to his experiments in scalding milk."

Your committee are of the opinion that, while milk, as well as other things, is of a perishable nature, and requires careful and judicious handling, the theory of heating milk has not yet been sufficiently demonstrated to recommend it as having advantages over a well-established system, and that all failures in experiments made are to be attributed to causes other than those stated by Mr. Arnold.

Your committee are happy to state that, while dissenting from Mr. Arnold in his theories as to the cause of the failure of his experiments in heating milk, they are in entire harmony with his statement that the "great bulk of milk in Northern Illinois" is "capable of making as good butter and cheese as milk in the East;" "that the cows are just as good;" "that the pastures abound" in "blue grass," a "food acknowledged to be among the best for making good milk." It is to regretted that Mr. Arnold did not enlarge on this subject, and state that the dairymen of the Northwest feed to their cows corn and oats, ground, which, in this country, remote from market, is so cheap as to justify its use in large quantities, which is a food acknowledged by all to be the best for making good milk.

In conclusion, your committee can not but regret that Mr. Arnold should advance any theory that should reflect on the dairy interests of this country upon so slight grounds as the experiments hitherto furnished.

LORENZO C. WARD, Chairman.
C. H. WILDER,
E. H. SEWARD,
G. P. LORD,
C. H. LARKIN,
Committee.

Topic No. 3—"The Supply and Demand of Dairy Products and Their Prospective Markets"—was now taken up.

I. BOIES said it was a deplorable fact that a large proportion of the butter made was not fit for table use; if made good it would always find a market; there was no fear of a good market if the product was fit for any market; good goods would sell themselves.

On motion, the matter of this Association making a display at the Centennial was now considered.

G. E. MORROW thought as long as the East was moving in the matter, we of the West ought also to be looking out for our interests.

Mr. R. R. STONE urged that the matter be attended to; thought it was of great importance to the West; we could there compare weights and measures with the whole world; thought a model cheese factory in operation on the ground would be a novelty, and reflect great credit on the business; as to expenses thought the factory would be self-sustaining.

Judge WILCOX did not think the cheese-factory plan the best; our products were all we need to show—not how we made them.

D. C. SCOFIELD did not believe the factory plan the best; it would cost $10,000; we could not take our water, grasses, cows, etc., along; thought it would be a failure.

Dr. R. R. STONE looked upon it as a missionary work; thought it was our duty to go and show the world how things were done in the West.

G. E. MORROW did not deem it a local affair; it was, in every sense of the word, national; should avoid rivalry of locality, or all would fail.

Capt. W. H. STEWART said our knowledge of geography was extremely bad; we, as a people, knew but little of the internal arrangement of Europe; this would be a good school; all exhibitions should be strictly American, absorbing states, counties, and districts.

G. P. LORD thought it well to make a display of our dairy products; whoever else was there, a hungry world would be there; all will notice our food, and will ascertain whether it can be produced cheaper than their own; all nations are studying the question of cheap food; give them to understand that this dairy region can produce the finest cheese in the world, and at reasonable figures, and foreign demand will be increased.

On motion of Judge WILCOX, a committee of seven, consisting of Judge Wilcox, R. R. Stone, Joseph Tefft, I. Boies, W. H. Stewart, G. P. Lord and G. E. Morrow, was appointed, to whom the whole matter of the Centennial was referred, to report to this meeting.

Topic No. 11—"Which Produces the Most Serious Results, Poor Milk or Poor Cheese Makers"—was now discussed.

C. H. LARKIN did not like to compare one class of men with another; did not exactly understand the question; it arrayed the cheese maker directly against the milk producer; was of the opinion that much damage was done by poor management on the part of the maker; the idea of using a milk strainer for the triple use of strainer, family towel and dishcloth, is not cleanly, to say the least; probably no article of food was so susceptible of decay as milk; all blame should be placed where it belonged; any person who sets himself up as an expert as a manufacturer, should receive no poor milk, for which there is no excuse; should be able to detect it at once; it was not just to patrons to receive poor milk; the makers should be willing to admit their blunders, and the producers the same; formerly it was all blamed to the milk producers; were approaching the truth rapidly; each should hear his share of the burden.

I. H. WANZER was no talker, but had been a manufacturer for many years, and his ideas had somewhat changed as to the evils arising from poor milk or poor cheese makers; when he received milk from patrons now he guaranteed the product; all makers should inspect the milk, and have the right to reject any or all, if not good; an expert could detect poor or dirty milk at sight; utensils should be kept clean; patrons should be visited often, and if all is not right at the farm, help to make it right, and when the milk has once passed the inspector, he should be held strictly responsible for the product; would be inclined to favor the cheese maker's side, but could not do so; stirring with a pine stick has been known to spoil a whole vat of milk, at another time a filthy strainer would produce the same effect; could not see any other way than to hold the cheese maker strictly responsible for all poor products.

THOS. BISHOP said Mr. Wanzer was an exception; he bought his milk, whereas, other factory men manufactured by the pound, merely acting as commission men; the more made, the more pay; had no interest at all in the product, only in quantity; would receive any and all milk, good or bad, as their pay was effected thereby; patrons and maker should have a like interest in the factory; to buy the milk was the only way to remedy the evil; in a new country patrons were strictly honest, but they soon learned that poor milk went just as far pay day as good milk, and so they all made poor milk; no factory should be run on commission, and unless the milk bought bought by the maker, three-fifths of all the factories in Illinois will close within three years, for they will not pay; more money could be made by working up the milk at home; consumers are too scarce, because cheese is too poor; could make his dairy average $100 per head by home manufacture, which he considered the best plan, all considered.

J. R. MCLEAN thought much care should be taken by the dairymen; often some trivial thing produced sour milk; had known a dirty thermometer to sour a whole batch of milk.

The committee on the Centennial matter submitted the following report:

The committee respectfully report that they have not deemed it advisable to recommend any specific plan of exhibiting the dairy products of this state at the Centennial exhibition at Philadelphia, but merely to suggest that we regard it very important that such products be fully represented there; that to this end a sum of money deemed sufficient be raised by contribution from every producer of milk and maker of butter and cheese, and that a committee of five be appointed by this convention, with full power to act in the matter, either independently or in conjunction with others, to see that a full and fair exhibition of the dairy products of this state be made at the Centennial exhibition.

S. WILCOX, CHAIRMAN.

The report was made the special order of business after dinner, and on motion the convention adjourned to 1:30 p. m.

THURSDAY, Dec. 16, 1875—1:30 P. M.

Convention called to order, and special business taken up, it being the report of the Centennial Committee, which, on motion, was adopted by the convention.

Also a committee of three, consisting of Judge Wilcox, E. H. Seward, and Dr. Tefft, was appointed to recommend a committee of five, in accordance with the above report.

The committee appointed to nominate officers for the ensuing year reported as follows:

President—Dr. Joseph Tefft, of Elgin.

Vice Presidents—C. C. Buell, of Whiteside county; S. W. Kingsley, Cook; W. J. Henning, Kendall; Hon. Wm. Patton, DeKalb; Thos. Wright, LaSalle; Luther Bartlett, DuPage; L. M. Brown, Lake; B. Cornwell, Boone; Ira Albro, DuPage; E. H. Seward, McHenry; R. G. Garnhard, Ogle.

Secretary—M. H. Thompson, of Elgin.

Treasurer—H. W. Mead, of Hebron.

The report of the committee was adopted.

The committee appointed to recommend a committee of five, who should constitute a permanent Centennial Committee, with power to act, submitted the following names, who were elected by the convention: Dr. J. Tefft, Hon. Wm. Patton, Capt. W. H. Stewart, M. H. Thompson, and G. E. Morrow.

Topic No. 13—"What is the Real Cause of the Difference in Price of Eastern and Western Cheese?"

Judge Wilcox did not know that to be a fact; believed Western cheese fully as high as Eastern cheese; it was equally as good, and ought to be worth as much.

H. W. Mead had shipped to Boston, and done quite as well in that market as Eastern cheese.

Dr. Tefft thought Western cheese would bring as much in the Eastern market as any other brand, for home consumption. But Eastern cheese were better adapted in shape to suit the foreign market; our cheese were too thin; must make them thicker, so they would suit the European taste; could always detect Western cheese; Englishmen did not like to buy it; the South want a thin cheese; would always make so as to suit the foreign taste.

The Committee on Dairy Utensils now made the following report, which was accepted and placed on file:

> The committee appointed to examine the Star Churn, beg leave to report that the invention proves to be the most simple and durable in construction, and the most effective and perfect in its workings, of anything ever before offered to the butter producers of this country, and we heartily commend it to every person whose average churning ranges anywhere not under two, nor over thirty pounds of butter. Your committee are of the opinion that the principle on which the above named churn acts, is worthy of the confidence of dairymen, and we recommend its adoption.
>
> In regard to a Butter Package exhibited by W. J. Allison, of Dundee, your committee think it superior to anything ever before seen by them, in manner and simplicity of construction.
>
> Also Guernsey's "Gilt-Edge Milk Pan and Cooler" comes well recommended, and your committee would indorse those recommendations, and consider it an improvement upon many modes of setting milk.
>
> I. Boies,
> I. H. Wanzer, } Committee.
> D. C. Scofield,

On motion, Topic No. 7—"The Best Method of Improving ing and Supplying the Dairy—Different Breeds and Their Adaptation to Our Climate"—was now taken up and discussed.

Dr. Tefft thought the best way to maintain the standard of our dairies was to raise our own cows; as to breeds, it was hard to tell just which possessed the most good points or characteristics for the dairy; the Jerseys, perhaps, were the best for butter, while the Ayrshires would be better for cheese; Short-horns also possessed fine dairy qualities; the Holstein cow stood well as dairy stock; she was large frame, hearty, and a good feeder, and was a great milk producer; Holstein butter possessed a distinct keeping quality; had been tested with butter from other breeds, with the best results; when tested by heat, Guernsey failed first, Jersey next, Ayrshire next, Holstein best of any; the butter is not quite so yellow as other breeds, but firmer; would stand transportation better than most butter; all considered, he believed the Holstein cow the best for Western dairymen; but all should raise their calves; could be done on skimmed milk, with good results; as to climate, they would all stand it if well cared for; the Holstein came from a cold climate; would do well with us.

Capt. W. H. STEWART said he had no ax to grind; was free from all breeds; did not like the globules, granules, etc.; it looked a little too much like Arnold; thought all dairymen ought to raise their calves from the best milkers, we are compelled often now to travel hundreds of miles, at great expense, to buy cows to supply our dairies; should raise our own; it pays to do so.

I. BOIES considered it the best plan to raise our cows; could not buy good cows; would not be satisfied until he had 100 cows which would yield him 400 lbs. of butter per cow annually; thought no breed had been bred so purely to milking qualities as the Holstein.

D. SEVERY said it was a hard question to exhaust; had practiced buying for twenty years, but had come far short of getting a good dairy; had only one cow now which he raised; had now commenced raising Holsteins, which, after much examination, he had become persuaded was the best dairy breed; the best plan is to raise our calves; it is not so much labor as many farmers think.

On motion of E. H. Seward, it was voted to hold the next annual meeting in the City of Elgin, commencing on the second Tuesday of December, 1876, and holding three days.

On motion, the Secretary was instructed to print the proceedings in pamphlet form and distribute them among the members, and for sale to those not belonging to the Association.

A vote of thanks was tendered the City of Elgin for use of the Court House.

Also to Marshal Powers for janitor and other services rendered the Association.

On motion, a vote of thanks was tendered J. R. McLean for his labors during the past year as President of the Association.

The President-elect, Dr. J. Tefft, of Elgin, was escorted to the chair, who made a few appropriate remarks, thanking the members for the high honor conferred, and hoping he might have the hearty co-operation of all the members.

On motion, the convention adjourned.

AN ACT

TO

PROTECT BUTTER AND CHEESE MANUFACTURERS,

Passed March, 1869.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

SECTION 1. Whoever shall knowingly sell, supply, or bring to be manufactured, to any Cheese Manufactory in this State, any milk diluted with water, or in any way adulterated, or milk from which any cream has been taken, or milk commonly known as "skimmed milk," or whoever shall keep any part of the milk known as "strippings," or whoever shall knowingly bring or supply milk to any Cheese Manufactory that is tainted or partly sour from want of proper care in keeping pails, strainers, or any vessels in which said milk is kept, clean and sweet, after being notified of such taint or carelessness, or any Cheese Manufacturer who shall knowingly use, or direct any of his employes to use, for his or their individual benefit, any cream of the milk brought to said Cheese Manufacturer, without the consent of all the owners thereof, shall, for each and every offense, forfeit and pay a sum of not less than twenty-five dollars, nor more than one hundred dollars, with the costs of suit, to be sued for in any court of competent jurisdiction, for the benefit of the person or persons, firm, association, or corporation, or their assignees, upon whom such fraud be committed.

SEC. 2. This act shall take effect immediately.

MEMBERS OF THE ELGIN BOARD OF TRADE,

Adams, Jas. H., Chicago, Ill.
Ahrensfield, H., DesPlaines, Ill.
Baltz, C., Chicago, Ill.
Burton, Wm., Genoa, Ill.
Bogardus Bros., Chicago, Ill.
Bartholomew, S. K. Marengo, Ill.
Bosworth, I. C., Elgin, Ill.
Bratzmann, N., Riley, Ill.
Bogardus, H. A., Chicago, Ill.
Butler, D. H., Elgin, Ill.
Bosworth, F. S., Elgin, Ill.
Bishop, E. L., Elgin, Ill.
Bigelow, A., Chicago, Ill.
Craft, Chas., Gray Willow, Ill.
Camp, M. T., DeKalb, Ill.
Crawford, A., New Lebanon, Ill.
Church, C. C., Elgin, Ill.
Church, A. B., Elgin, Ill.
Clark, W. L., Barrington, Ill.
Conn, G. W., Hebron, Ill.
Dean, C. P., Elgin, Ill.
Davidson, O., Elgin, Ill.
Dow & Moran, Chicago, Ill.
Elgin Butter Co., Elgin, Ill.
Ford, H. L., Geneva, Ill.
Gould, C. W., Elgin, Ill.
Gage, J. H., Udina, Ill.
Grimes, R., Manteno, Ill.
Hathaway, W., Hampshire, Ill.
Hunter, W. J., Elgin, Ill.
Jackson, E. V., Sycamore, Ill.
Judd, A. T., Aurora, Ill.
Johnson, D., Elgin, Ill.
Klock, Chas., Clintonville, Ill.
Knapp & Plummer, Lombard, Ill.
Lovell, A., Sycamore, Ill.
Lake, G. W., Gray Willow, Ill.
Mallery & Co., Elgin, Ill.
Maltby, C. A., North Plato, Ill.
Mead, H. W., Hebron, Ill.
McLean, J. R., Elgin, Ill.
Mann, A. J., Burlington, Ill.
McBride, T., Elgin, Ill.
Nolting, A., Elgin, Ill.
Osgood, W. F., St. Charles, Ill.
Ohsmann & Peterson, Flint Creek, Ill
Pease, W. L., Elgin, Ill.
Pierce, J. C., Malta, Ill.
Panton, Wm., Clintonville, Ill.
Rogers, John H., Burlington, Ill.
Rugg, N. N., Antioch, Ill.
Richards, D., Chicago, Ill.
Robertson, John, Lake Zurich, Ill.
Russell & Gale, Volo, Ill.
Rees & Martin, Sycamore, Ill.
Stone, R. R., Elgin, Ill.
Skinner, G., Fox Lake, Wis.
Switzer, M., St. Charles, Ill.
Slosson, R. H., Chicago, Ill.
Sherwin, A., Elgin, Ill.
Stewart, A., Barreville, Ill.
Schoonmaker, J. M., Hix Mills Factory, Ill.
Shedden, A., Udina, Ill.
Sylvester, C. W., Marengo, Ill.
Tefft, Joseph, Elgin, Ill.
Town, M. C., Elgin, Ill.
Todd, Hugh, Elgin, Ill.
Tefft, E. A., Clintonville, Ill.
Thornton, Ed., Blackberry, Ill.
Tuck & Son, Elgin, Ill.
Vosburg, J. B., Richmond, Ill.
VanPatten, A. S., Delevan, Wis.
Wanzer, I. H., Elgin, Ill.
Wood, D. E., Huntley, Ill.
Weaver, N., Waterman, Ill.
Wanzer, S., Chicago, Ill.
Weightman, W. S., Buena Vista, Ill.
Wells, C. D., Chicago, Ill.

HONORARY MEMBERS.

Mrs. C. C. Church, Elgin, Ill.
Mrs. Jane Smith, Wisconsin.
S. L. Taylor, *Advocate*, Elgin, Ill.
R. P. McGlincy, *Advocate*, Elgin, Ill.
Ed. Keogh, *Times*, Elgin, Ill.
Dudley Randall, *Daily Bluff City*, Elgin, Ill.
G. Ford, Lima, New York.

TRANSACTIONS ON THE ELGIN BOARD OF TRADE,

From March 2 to December 7, 1875, Inclusive,

AS SHOWN BY THE SECRETARY'S BOOKS.

Dates.	No. of Boxes Cheese sold..	Aggregate pounds......	Lowest and Highest price for Cheese..	Pounds of Butter ..	Av. Price	Total amount of Sales ......
March 2	2,985	117,957	14 @14½	17,810	36	$23,798 22
March 9	1,314	52,225	14¼@15	9,940	37½	11,530 99
March 16	780	31,500	14½@15	6,000	37½	7,252 87
March 23	720	31,300	14 @	9,600	38	8,360 00
March 30	1,210	52,600	14 @14½	13,980	38	12,605 00
April 20	700	36,400	11 @13	3,650	37½	4,981 50
April 27	844	40,674	10½@12½	2,500	36	5,928 10
May 4	2,033	85,584	12¼@13	2,800	36	11,674 43
May 11	815	43,300	11½@12¼	3,200	36	5,337 75
May 18	1,177	48,660	10 @11¾	3,000	35	5,949 47
May 25	967	44,190	9½@11	....	....	4,356 15
June 1	1,050	48,230	8 @ 9½	3,500	33	5,518 20
June 8	1,130	55,775	8.95@ 9	....	....	5,005 70
June 15	3,216	168,700	9 @ 9½	4,000	31	14,413 50
June 22	3,324	118,950	8¾@ 9¼	3,500	32	12,898 50
June 29	1,993	93,369	9⅛@10	2,000	31½	9,544 20
July 6	2,236	94,252	9 @10	3,000	31½	10,981 30
July 13	5,963	260,155	9½@	2,500	31½	25,733 77
July 20	1,530	63,205	9¼@ 9½	6,500	31	7,824 87
July 27	3,775	171,525	9½@	300	24*	16,144 68
August 3	4,030	187,290	9½@10	4,500	32½	18,198 31
August 10	2,115	104,420	10 @10½	4,700	33	11,505 53
August 17	2,145	95,825	10 @10½	1,000	33	12,663 32
August 24	650	28,470	10 @10¼	....	....	3,233 30
August 31	1,000	42,450	9 @	3,700	33	5,098 50
September 7	475	18,900	9¼@10	3,300	33	2,976 75
September 14	2,425	121,750	9 @10½	6,800	32	12,748 62
September 21	5,990	370,700	9½@10	6,600	33	27,907 71
September 28	4,135	184,270	10 @10¾	6,635	34½	22,156 70
October 6	2,745	124,460	11 @11½	5,400	33½	13,943 70
October 12	3,960	184,340	12 @	8,400	36	23,240 37
October 19	3,390	163,400	11½@12½	6,700	35	22,789 50
October 26	2,350	94,400	12 @	15,360	35	16,287 00
November 2	2,830	126,600	11½@12	8,100	36	17,956 00
November 2	....	....	....	....	32*	....
November 9	5,590	264,250	12 @12¼	12,100	36	36,326 61
November 9	....	....	....	....	33*	....
November 23	4,045	124,100	11½@12	20,400	36	25,767 12
December 7	1,768	76.610	11 @11½	13,700	35	12,581 70
Totals	87,405	3,970,786		226,175		$496,220 04

*Private Dairy.

[The accompanying figures of the Transactions on the Elgin Board of Trade, while not properly belonging to the Proceedings of the State Dairymen's Association, are presented to give an idea of the amount of business done on the Board, as well as to show the amount of dairy products handled on the Board during the time specified. The showing is very gratifying, and further shows that the Elgin Board of Trade is doing much to make Elgin the great Dairy Center of the Northwest.]

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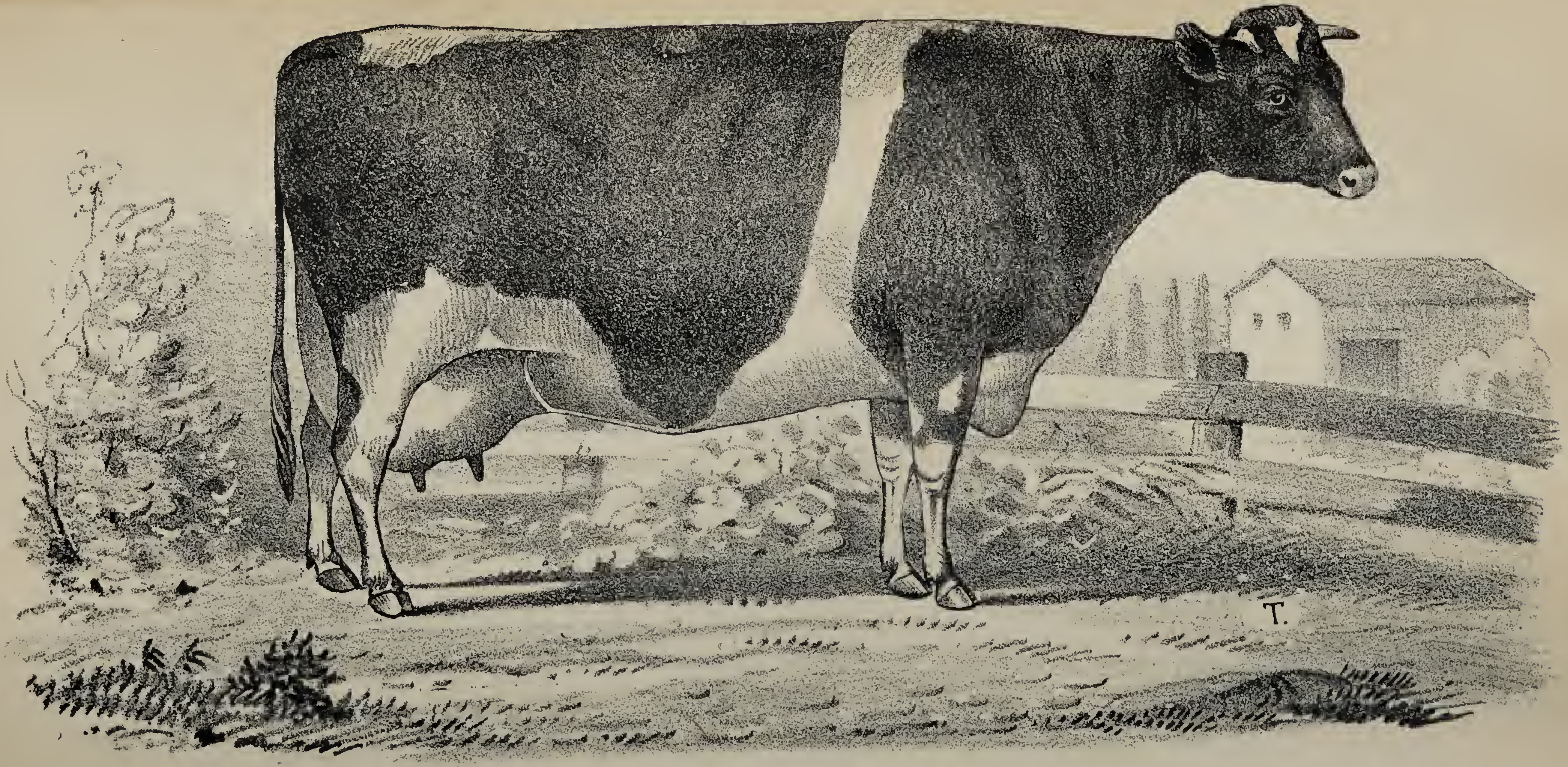

HOLSTEIN COW.

"ASTREA".

Imported from NORTH HOLLAND.

by GEO. E. BROWN, ELGIN, ILLS.

Importer of Holstein Cattle Cleveland Bay & English Draft Horses.

HOLSTEIN CATTLE.

M. H. THOMPSON, Esq.: ELGIN, ILL., Feb. 1, 1876.

DEAR SIR—In compliance with your request to furnish for your report some information in regard to the Holstein cattle, I offer the following: Portions of it are the testimony of others and some facts the result of my own experience with the stock in this country and from observations made during my visits to Holland. And just here let me suggest that no person interested in fine cattle, and particularly dairy stock, should fail to spend a few days in Holland. The mere sight-seer will be well repaid, for, as has been very properly remarked by a visitor there, "*Holland is like itself and nothing else.*" One needs to *see* the wonderful systems of dykes, canals, ditches, and windmills, to appreciate them. The well-kept highways (more like avenues in a park), lined on either side by beautiful shade-trees; the rich, green meadows dotted with thousands of cattle and sheep; the peculiar construction of the dwellings, and the *marvelous neatness* noticed on every side, forming a picture never to be forgotten. The frank, simple ways of the people places one at once at his ease, and although we have made many improvements on their dairy system, much may be learned of them.

The first question asked in relation to these cattle is, What advantages do they possess over other breeds for the American dairy, and particularly for the Northwest? In a few words, they are these: A combination of large-size well-proportioned, hardiness, a quiet disposition, rapid growth, early maturity, and milking qualities possessed by no other breed in existence, giving a large flow of *rich milk for a long season.*

Their "holding-out" propensity is remarkable, and is one of their best characteristics; and being one of the oldest and purest breeds, they transmit their qualities to their progeny with almost absolute certainty.

They have been bred long enough in this country to prove that they are particularly adapted to our feed and climate. The first we have record of were brought by the West India Company in 1625, and later importations by the Dutch settlers along the Hudson. About 1810 Consul Jarvis imported a few and bred them at his farm at Weathersfield, Vermont; and I am told that grades, descendants of that importation, are still to be found in Northeastern New York, and have always been noted milkers. But it is to the importations of the past twenty-five years, and the "Association of Holstein Breeders," that these cattle owe their present position in the United States. During this time they have been thoroughly tested in different parts of our country, from Maine to California, and I have yet to learn of the first case where they have failed of good results in the hands of practical,experienced breeders. This success I attribute largely to the manner of feeding and breeding in their own country. Although they have been brought to a high state of perfection, it has not been done by high feeding and forcing, as has been the case with other improved breeds. The grass in Holland is abundant and rich, and the hay fine and nutritious, and this constitutes their food for the two seasons, summer and winter. Feeding grain is the *exception*, not the *rule*. Neither are many roots raised in *North Holland.*

I will also state, in passing, that abortion is little known in Holland, although it is exclusively a dairy country; and it occurred to me that the simple nature of their feed and the gentle treatment of the cows had much to do with it. In all my experience with Holsteins, I have had but three cases of abortion. Two of these I knew to be the result of accident and sickness, the other I believe to be the effect of a fall.

I do not wish to convey the idea that every cow in Holland is a large milker, but the system followed, as it has been, of culling their poor and indifferent milkers and fattening them, has *raised* the *grade*, and increased *the per cent. of milkers* far above that of any other breed. A cow that will not give from 20 to 25 liters per day (a liter is about equal to a beer quart) for a *long time*, is considered quite ordinary; those giving 25 to 30 liters are quite common, and many giving from 30 to 40 liters per day; and this, let it be remembered. is on *grass alone*. But, as I have said before, it is not the daily yield for the *first few weeks* that makes the Holstein cow so valuable; it is her *yearly* amount. Very careful experiments have been made, both as to the amount of feed consumed, and yearly average of dairies composed of Holsteins and other breeds. In the dairy of the Agricultural College at Eldena, Prussia, composed of Holsteins and Ayrshires, the Holsteins gave an average of 4,437 quarts per year, and the Ayrshires 2,247 quarts. They also proved the fallacy of the theory that stock consume feed in proportion to their size. By careful experiments, they found that, to keep the Ayrshires in their normal condition, they required one-fiftieth of their weight in food, while the Holsteins required only one-sixtieth of *their* weight. Cattle of the same breeds, but of different weights, were experimented with, with a similar result. At the agricultural station at Pommeritz, Holsteins and Short-horns were tested, the experiment lasting 365 days. The Short-horns averaged 6,801 pounds, and the Holsteins 8,034 pounds, both breeds having precisely the same care and keeping. The Holsteins showed a yield of 18 per cent. in excess of the Short-horns. One dairy of 190 Holsteins reported an average of 4,076 quarts per year. Thus far the Holstein in this country has not gone back on her home record.

G. S. Miller, Madison county, N. Y., gives a report of his three imported cows. A careful record was kept for *three years*, and showed that one cow milked 987 days, one 916, and one 937 days, and yielded an average of 31 6-100 pounds, 34 32.100 pounds, and 25 4-100 pounds per day, respectively. Average yield per cow, 9,597 pounds per year. Their feed, during this time, was six quarts of grain per day in spring; four quarts per day during fall and winter; June, July, and August, nothing but pasture.

Col. H. C. Hoffman, Chemung county, N. Y., a practical dairyman, selected six of his best graded native cows, and placed them with his herd of imported Holsteins, giving all precisely the same feed and treatment for *two years*, keeping an exact record of each cow's milk. The grades and natives yielded from 7,000 pounds to 8,000 pounds per year, and the Holsteins from 10,000 pounds to 11,000 pounds, from 25 to 30 per cent. in favor of the Holsteins.

I have many other statements before me equally favorable, but many of them being of individual cows are of little value, compared with such as I have given, for it is the *average* and *comparative* value we are after; and knowing these gentlemen to be perfectly candid, practical and reliable, I have entire confidence in their report.

Of seventeen of my own selection and importation in 1874, all but two proved to be all I anticipated, and some of them far exceeded my expectations; of eight imported in 1875, all proved *good*, and five *superior*, milkers. Nearly all of them having passed out of my hands, I am unable to give an accurate report.

The size of the Holstein compares favorably with other large breeds, mature cows, in good, fair flesh, weighing from 1,450 to 1,700 lbs.; bulls, at three or four years, weighing from 2,000 to 2,500 lbs. I saw a great many fat cows in Holland that would weigh from 1,800 to 2,000 lbs. Holstein steers have proved very rapid growers and profitable feeders.

I should be glad to furnish some testimony on this latter point from some of our Illinois farmers, were it not for encroaching on your space, but will gladly answer any questions or give any information I may be able to those addressing me.

Respectfully, yours,

GEO. E. BROWN.

PROCEEDINGS

OF THE

AGRICULTURAL
EXPERIMENT STATION.
JAN 11 1890
UNIVERSITY OF ILLINOIS.

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION,

AT ITS

THIRD ANNUAL MEETING,

HELD AT THE

CITY OF ELGIN, ILLINOIS, DECEMBER 12, 13 & 14, 1876.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

ELGIN, ILL.
THE ADVOCATE POWER PRINTING AND PUBLISHING HOUSE,
14 & 16 River Street.
1877.

OFFICERS OF THE ASSOCIATION

FOR 1877.

PRESIDENT,

DR. J. TEFFT, Elgin, Ill.

VICE-PRESIDENTS.

Prof. Frank H. Hall, Sugar Grove, Illinois.
Dr. J. Woodward, Marengo, Illinois.
C. C. Buell, Rock Falls, Illinois.

SECRETARY,

M. H. THOMPSON, Elgin, Ill.

TREASURER,

H. W. MEAD, Hebron, Ill.

COUNTY TRUSTEES.

Kane Co.	J. R. McLean, R. P. McGlincy, E. G. Ketchum.	Du Page Co.	Danl. Dunham, Ira Albro, Peter Pratt.
Cook Co.	Hon. John Wentworth, Dr. Kennicott, A. H. Dalton.	McHenry Co.	E. H. Seward, Dr. J. Woodward, T. McD. Richards.
Boone Co.	Judge L. W. Lawrence, B. Cornwell, T. E. Munn,	Stephenson Co.	John Smallwood, S. F. Henderson, John Swenza.
Iroquois Co.	David Brumback, W. E. Kimbloe, W. H. Mann.	Clay Co.	Thos. Milsom, Flora. B. B. Ingraham, Flora. Gen. L. B. Parson, Flora.
De Kalb Co.	Hon. Wm. Patten, Dexter Severy, A. Lovell.	Whiteside Co.	Jas. Howland, Robt. Galt, Joshua Anthony.
Ogle Co.	Israel Boies, Byron. Jeremiah Davis, Junc'n. M. Baker, Junction.	Knox Co.	A. G. Miller, Oneida. S. C. Wood, Galesburg. C. J. Ferris, Galesburg.

The fourth and next annual meeting of the Association will be held at the city of Elgin, Tuesday, Wednesday and Thursday, December 11, 12 and 13, 1877.

G. A. 1848

MEMBERS OF THE ILLINOIS STATE DAIRYMEN'S ASSOCIATION.

Adams, D. C.	Dundee,	Illinois.
Adams, Guy	Elgin,	"
Albro, Ira	Wayne,	"
Baltz, Chas	Chicago,	"
Barclay, D. F.	Elgin,	"
Barnard, Hon. A. S.	Lisle,	"
Bartholomew, S. K.	Marengo,	"
Bartlett, L.	Bartlett,	"
Bierman H.	Elgin,	"
Bishop, Thomas	"	"
Boies, Israel	Marengo,	"
Boies, Wm	"	"
Bosworth, F. S.	Elgin,	"
Bosworth, I. C.	"	"
Brown Geo. E.	"	"
Brown, L. M.	Lake County,	"
Browning, J. H.	Elgin,	"
Brumback, David	Gilman,	"
Bryant, E. W.	Princeton,	"
Buell, C. C.	Rock Falls,	"
Bumgartner Bros	Frankfort,	"
Burns, R. C.	Elgin,	"
Burritt, Peter	"	"
Burton, Wm	Genoa,	"
Carpenter, Hon. J. A.	Elgin,	"
Chapman, S.	Oneida,	"
Chapman, S. W.	Elgin,	"
Christian, D. L.	Peotone,	"
Church, A. B.	Elgin,	"
Church C. C.	"	"
Church, M. K.	Barrington,	"
Clark, John	Somonauk,	"
Cole & Craft	Gray Willow,	"
Corron, W. T.	Elgin,	"
Cornwell, B.	Boone County,	"
Cox, B.	Elgin,	"
Davidson, O.	Elgin,	"
Eddy, John	Harmony,	"
Eldred, N.	Gilman,	"
Emmert, W. P.	Freeport,	"
Fairrington, C. W.	Rockford,	"
Ferris, C. J.	Galesburg,	"
Fisher, H.	Carpenterville,	"
Ford, H. L.	Geneva,	"
Gage, J. H.	Udina,	"
Garnhard, R. G.	Ogle County,	"
Gillett, Edw	Aurora,	"
Gillilan, John	Algonquin,	"
Gould, C. W.	Elgin,	"
Griggs E. H.	Gray Willow,	"

Hall, Frank H.	Sugar Grove,	Illinois.
Hammond, D. S.	Elgin,	"
Hammond, H. A.	Belvidere,	"
Handy, Saml.	Downer's Grove,	"
Hatch, Isaac.	Little Rock,	"
Hawthorne, Geo. E	Elgin,	"
Heideman, A.	"	"
Henning, W. J	Plano,	"
Hess, W. H.	Campton,	"
Holt, D. M.	Rockford,	"
Huntley, Thos. S.	Huntley,	"
Johnson, D.	Elgin,	"
Keating, John	"	"
Ketchum, E. G.	Dundee,	"
Kingsley, J. M.	Barrington,	"
Kingsley, S. W	Dundee,	"
Klock, Chas	Clintonville,	"
Lake, G. W	Gray Willow,	"
Larkin, C. H.	Elgin,	"
Lester, Fred	Salt Creek,	"
Lord, G. P.	Elgin,	"
Lovell, A.	Sycamore,	"
Mann & Sherwin	Elgin,	"
Mead, H. W	Hebron,	"
Milsom, Thos.	Flora,	"
Mitchell, David	Algonquin,	"
Moran, P.	Chicago,	"
Morrow, G. E.	Champaign,	"
Munn, T. E.	Belvidere,	"
Murphy, Thos.		
McAllister, O. S.	Hampshire,	"
McDermaid, Palmer	Rockford,	"
McClure, F. L.	Elgin,	"
McLean, J. R.	"	"
McQueen, John A.	"	"
Maramour, D. H.	Lisle,	"
Nolting, A.	Elgin,	"
Olmstead, Geo	Genoa,	"
Osgood, W. F.	St. Charles,	"
Patridge, L. H.	Millington,	"
Patten, Wm	Sandwich,	"
Panton, Wm.	Clintonville,	"
Probert, Chas. L.	Gray Willow,	"
Richards, D.	Chicago,	"
Richards, T. McD.	Woodstock,	"
Rogers, John	Burlington,	"
Root, A. W.	Elgin,	"
Russell, I. N.	"	"
Scofield, D. C.	"	"
Severy. D.	Leland,	"
Seward, E. H.	Marengo,	"
Shedden, Andrew	Udina,	"
Shelden, L. W.	Union,	"
Sherman, Henry	Elgin,	"
Shepperd, Frank	"	"
Slade, S. M.	"	"
Smallwood, John	Freeport,	"
Stevens, C. V.	Somonauk,	"
Stewart, Wm. H.	Woodstock,	"
Stoll, H. C.	Frankfort,	"

Stone, R. R.	Elgin,	Illinois.
Swain, Henry	Oconomowoc,	Wisconsin.
Switzer, M.	St. Charles,	Illinois.
Tazewell, Jas	Elgin,	"
Tefft, E. A.	Clintonville,	"
Tefft, Joseph	Elgin,	"
Tefft, Jon	"	"
Thompson, A.	"	"
Thompson, M. H	"	"
Thompson, T.	"	"
Todd, A. W.	Flora,	"
Tutttle, Milo	Sandwich,	"
Waldron, E. D.	Elgin,	"
Wanzer, I. H.	"	"
Ward, L. C.	St. Charles,	"
Ward, S.	Lemont,	"
Washburn, Jas.	S. La Fox,	"
Waterman, G. W	Barrington,	"
Wheeler, S. M.	Elgin,	"
Wilcox, S.	"	"
Wilson, H.	"	"
Wilson, L. F.	Flora,	"
Wood, D. E.	Huntley,	"
Wood, Jackson	"	"
Wright, F. W.	Elgin.	"
Wright, S. N.	Clintonville,	"
Wright, Thos	La Salle County,	"
Wilder, C. H.	Evansville,	Wisconsin.

HONORARY MEMBERS.

W. W. Corbett, *Prairie Farmer.*

R. P. McGlincy, *Elgin Advocate.*

T. H. Glenn, *Western Rural.*

C. S. Kilbourne, Cor. *Chicago Times.*

CONSTITUTION.

SECTION 1. This Association shall be known as the Illinois State Dairymen's Association.

SEC. 2. The officers of this Association shall consist of a President, one Vice-President from every county in the State represented in the dairy interest, a Secretary and a Treasurer.

SEC. 3. The officers of this Association shall be elected by acclamation at the annual meeting, to be held on the second Thursday in December in each year, having been previously nominated by a committee appointed for that purpose.

SEC. 4. The place and time of meeting shall be designated at each previous meeting.

SEC. 5. The objects of this Association shall be the encouragement of the dairy interests of our State, with mutual improvement as relates to dairy interests in manufacturing and marketing the product of our dairies.

SEC. 6. Persons may become members of this Association by the payment of an annual fee of $1.00.

SEC. 7. The officers of this Association shall constitute an Executive Board for the transaction of business.

SEC. 8. The Constitution of this Association may be altered at any regular meeting of the Association, on giving notice at the previous meeting of such intention.

December 15, 1876.—The following amendment was added to the Constitution:

"That Sec. 2 be so amended as to read: The officers of this Association shall consist of a President and three Vice-Presidents, a Secretary and Treasurer. There shall also be elected, or appointed, three trustees in each county of this State represented, or that may hereafter be represented in the convention, who shall be charged with the interests of the Association in their respective counties, and whose further duty it shall be to report to the officers of the Association annually, or oftener, if required, the statistics of the dairy interests in their respective counties.

"SEC. 3. The officers of this Association shall be elected by ballot, no member being entitled to a vote who has not paid his initiation fee for the year.

"SEC. 9. The Association shall have full power to make such Rules and By-Laws as shall be deemed advisable."

PROGRAMME OF THE THIRD ANNUAL MEETING.

The Executive Committee of the Illinois State Dairymen's Association arranged the following programme for the Third Annual meeting of the Association:

1. Address of Welcome, - - - - - - By the PRESIDENT.

2. The supply and demand of dairy products, and their future markets.
HON. S. WILCOX, Elgin; C. H. WILDER, Wis.; H. W. MEAD, HEBRON.

3. The best plan to avoid the low prices which usually prevail for butter and cheese during the summer months.
R. R. STONE, Elgin; R. W. STEWART, Hebron.

4. Manure. How to care for and apply it.
JOHN KEATING, Elgin; C. H. LARKIN, Elgin.

5. The best method of improving and supplying the dairy; different breeds, and their adaptation to our climate.
D. SEVERY, Leland; HON. WM. PATTEN, Sandwich; GEO. E. BROWN, Elgin.

6. The manufacture of skimmed cheese. Is it injurious or beneficial to the dairy interests.
HON. S. WILCOX, Elgin; D. E. WOOD, Huntley; A. H. BARBER, Chicago.

7. Marketing dairy products.
J. R. MCLEAN, Elgin; WM. H. STEWART, Woodstock.

8. The best and cheapest feed to keep up the supply of milk during the summer drought.
S. W. KINGSLEY, Barrington; THOS. BISHOP, Elgin.

9. Grasses. The best varieties for hay and pasture, as adapted to our climate and soils
W. J. BURDICK, White Water, Wis.; C. C. BUELL, Rock Falls; S. WILCOX, Elgin.

10. How shall we improve the dairy interest in Illinois?
ISRAEL BOIES, Byron; C. C. BUELL, Rock Falls; G. P. LORD, Elgin; R. R. STONE, Elgin.

11. What are the esseniial requirements of a good dairy farm?
R. W. STEWART, Hebron; C. C. BUELL, Rock Falls; M. H. THOMPSON, Elgin.

12. What is the best and most economical mode of handling milk to make butter from small dairies, from five to twenty-five cows?
C. GILBERT, Marengo; S. K. BARTHOLOMEW, Marengo; HON. S. WILCOX, Elgin.

13. To what extent may soiling be profitably substituted for pasturage?
D. C. SCOFIELD, Elgin; W. D. HENNING, Plano.

14. Can summer butter be so handled and packed that it will retain its freshness and sweetness for winter use?
N. ELDRED, Gilman; C. C. BUELL, Rock Falls; L. BOIES, Marengo.

15. Can the dairymen of Illinois profitably raise calves to supply the dairy?
I. H. WANZER, Elgin; WM. BOIES, Byron; E. H. SEWARD, Marengo.

16. *Resolved*, That the display of dairy products at the American Centennial has been of great benefit to the dairy interest at large.

ILLINOIS STATE DAIRYMEN'S ASSOCIATION.

THIRD ANNUAL MEETING

AT ELGIN, DECEMBER 12TH, 13TH AND 14TH, 1876.

The third annual convention of this Association was held at Elgin, Ill., commencing December 12, and closing on the 14th. It was by far the most important convention yet held by this Association. Many new members were in attendance, some ten or twelve counties in the State being represented, extending from the State line on the north to Clay county on the south. Many able papers were read before the convention. Many of the figures given in those papers which we believe to be strictly correct, are really enormous, and only show the rapid growth of this great agricultural industry.

The convention was called to order at 1:30 p. m. on Tuesday, by DR. J. TEFFT, president of the Association, who delivered the following address, which was well received by the Association.

DR. TEFFT'S ADDRESS.

FELLOW CITIZENS, DAIRYMEN OF ILLINOIS:—A few years ago the Illinois State Dairymen's Association was inaugurated, the object of which was for social intercourse, enjoyment and mutual improvement of its members. For the furthering of this purpose we meet here to-day, and before proceeding to further business you will please allow me, as a dairyman of Illinois and a citizen of this city, to extend to you, one and all, a hearty welcome to this hall, to this city of ours, and to the homes and hearts of all well-wishers of this great, though as yet infantile, dairy interest in this thriving State of ours. We would say again, we most cordially welcome you here amongst us, hoping and trusting as we do, that you may profit and we improve by your sojourn with us during the deliberations of this Association.

The age in which we are permitted to inhabit this terrestrial globe of ours is replete with important events, and we are making rapid strides in progress and improvement. If you wish evidence of this, turn your mind's eye back fifty or one hundred years and compare the dairy interests then with now. We need not confine ourselves to the dairy interests alone to note progress. Look, if you please, at our railways, which almost annihilate time and distance as compared with former modes of travel. Take a glance at our telegraph system, which is able to transmit thought thousands of miles across oceans ahead of time. Look, if you please, at our monitors, which put to trembling the navies of the entire civilized world. And last, though not by any means least, behold the great Centennial exposition, which closed its session only a few days ago. Here were found the representatives, together with their products, from all, or nearly all, civilized nations of the globe.

The coming together, the mingling and commingling and change of thought with thought will, we hope and trust, serve to elevate the morals of nations, and bring about a rightful mode of settling differences other than by that barbarous custom of war, and thereby allow our monitors to be made into plowshares, and the other implements of war into milk pails, cheese-vats and cheese-presses.

Less than half a century ago the red man was wont to roam over these prairies with tomahawk and scalping-knife, bedewed with the crimson gore of the newly slain victim who had chanced to struggle this way, attracted or allured by a beautiful faced country, or by a salubrious climate with a rich and fertile soil, to seek a western home, although deprived by so doing of many of the necessary and social comforts of life. It was here, in the valley of the great Father of Waters, that the western bound traveler sat himself down on a soil of virgin purity, glowing with vegetation in all its pristine beauty. Here it was that the young stalwart farmer, together with the elderly gray-headed man, commenced opening up the soil; and although scarce fifty years have elapsed, yet we are favorably known for the amount of cereals, pork, beef, butter and cheese we have raised or manufactured and put upon the various markets of the world.

Behold us then in our infancy with a large surplus product for sale in foreign markets, and tell us, if you please, what will become of our products when we grow to adult age?

The question is frequently asked, of what use are these dairy conventions? In answer to that question allow me to say that in my judgment, to many they are of but little use; but to the inquiring, thinking mind, they are of much benefit. Subjects are here brought up of vast interest to the dairyman and agriculturist, and widely discussed.

The great moving power of the human machine is thought, and whatever stimulates us to rightful thought is of vast interest to us, no matter whether in this convention or elsewhere. Mankind, as a general thing, are prone to pass over many important subjects with far too little thought. It is much easier to tramp on in the old beaten pathway of our forefathers than to turn aside to look for a better or more improved one.

Progress and improvement are the direct results of mature thought rightfully applied. The man who thinks, and keeps his thoughts hidden in the recesses of his own cranium, is of but little use as a thinker to his fellowmen generally.

Mankind usually express their thoughts orally or by writing the same, and as most farmers and dairymen have not the time to spend in writing and publishing books, but can spend a day or two in convention and orally give to the public or to all who may choose to come and hear, their experience, acquired by long and careful observation of facts which have transpired under their own management of the farm and dairy.

We are led to believe that there are many improvements in the dairy and in the management of the same since Abel, the second son of Adam, made his offering to God of milk and the first fruits of his flock, which was made in the year of the world 129, or 5251 years ago. It appears by record that God was delighted with the oblation, and we have no reason to doubt but his blessing still rests upon all honest dairymen even to this day.

On motion, the amendments made to the constitution last year were now taken up and confirmed by the Association, and a committee to prepare and report a set of by-laws, was appointed, consisting of I. H. WANZER, Elgin; Hon. W. PATTEN, Sandwich; and C. J. FERRIS, Galesburg.

Question No. 1 of the programme, "The Supply and Demand of Dairy Products and their Future Markets," was then taken up, and the discussion opened by Hon. S. WILCOX, of Elgin, who said it was a difficult question to discuss—it was very difficult to ascertain the exact amount manufactured or consumed, neither could he tell the amount annually exported. He believed the demand depended a great deal, if not wholly, upon the quality. A few years ago cheese was a luxury; now it is a necessity; we must all have it, and we do not argue the price if it is only good—a good article will be used more freely than a poor one. There is a vast amount of poor cheese made in the northwest—no real good cheese can be found in the market, which is a lamentable fact; in the early days we had only rude and primitive apparatus, but made good cheese; now its glory has departed. The quality in a great measure decides the quantity. Wisconsin made a better article of cheese than Illinois; they do not skim as much; it commands a readier sale and brings them more money; this skimming to death diminishes the demand. Skimming the milk for butter and then working the *blue remains* into *stuff* called cheese was a fraud, and was most certainly ruining the standard of our product. He knew the factorymen claimed there was a demand for it—that they could sell it, and could get more money out of the milk—but it was only for a short time; the re-action would certainly be serious as far as supply and demand were concerned; the supply should certainly be of a better quality. The price of butter is high enough, but the cheese is too high for the miserable stuff. The great difficulty arose from the mode in which most of the factories are run. The factory is furnished its milk by the farmer, and works it up on commission. The factoryman has but little interest in the quality or price of his goods as long as his commission is a fixed amount, and can not be affected by what his product brings. His only interest is to produce as much as he can, as his pay is by the pound. The milk should be bought at all factories; they should then take care to produce a good article—they would be compelled too, to find sale for their goods; they could then sell at will, or hold to suit the market. As it now is, the dairymen furnish the most of the capital to run the concern, and have but little to say about it. Milk should never be worked up on commission. We do not now produce one quarter of what our land is capable of producing. If we produce more with the same investment we can afford to produce cheaper and make a profit. We must have a change, or many dairymen who are depending upon outside factories for a sale of their milk must go out of the business, as it certainly will not pay. No factory should make anything but a first-class product. Who would ship this miserable stuff? We might as well throw it into Boston Harbor. Our great market is our home market. We must take care of that—make an article so good that a consumer will make a second purchase.

Three-fourths of our whole country is not capable of producing their dairy products; we being more favored with those essentials of a dairy region, must supply them, and we must be careful not to let this great industry be taken from us by some other locality, whose people will profit by our mistakes. The fact is we can not find in the home grocery a single good cheese unless it is imported. We refuse to use it; it is a mockery; when new, it is fair, but when cut—that is the last of it. The future of the business he considered flattering, as there would always be a good demand for a good article.

J. R. McLean felt aroused at the broad denunciation of *skimmed cheese* by Judge Wilcox ; he said on the Elgin Board of Trade there certainly was a great demand for this kind of cheese. Reform, he said, was the watchword, and people had now become so reformed they really liked skimmed cheese, and were willing to pay for it. It was a fact that full cream cheese would not sell as readily as skimmed; there was only one cent per pound difference in price, and often not that in quality. The fact is the people have been so reformed they will not eat full cream cheese any longer. Dealers would not buy full cream cheese—could not keep and could not sell it; the fact is, it is hard to sell a genuine article of food. Split bean coffee, spurious tea and sanded sugars meet with ready sale; could not see how we could get along without the skimmed cheese.

Dr. R. R. Stone said he thought the two gentlemen who had preceded him were extremists; he thought there was a happy medium which could be adopted and not follow either of these extremes. Had been twelve years in the cheese business. In early times he made cheese the same as he made hay or pork, and sold once a year; it was then old and tough and strong enough to do house work; but our people were used to it, and so they liked it. But as fashion changes, so does the table. The demand was now for a *mild cheese*, which meant skimmed; you cannot keep full cream cheese—it becomes stringy and sharp. We receive orders for mild cheeses—we ship skimmed. They fill the bill and we receive our pay, and that is the end of it; but should we ship *full cream* cheese, the end would not be yet. The trouble is a large amount of cheese is made in the season when there is no demand for it; *i. e.*, when fresh fruits are abundant. It seriously affected the consumption of cheese. If none was made in winter, when it was wanted, a good price could be obtained. Skimmed cheese, in the long run, is a damage to the business; if you are compelled to hold it a month or two it is not fit to eat. It is also difficult to have a dairy in flush milk just when you want them, but if it could be so arranged as to make the milk in winter it would seem best. Did not agree with Judge Wilcox that all factorymen should buy the milk at the beginning of the whole season, for the reason that milk and its products were as liable to fluctuate in price as any other commodity, and it would seem only fair and just that the dairymen should bear a portion of the burden. The same practice is pursued in the Northwest as that in New York and the Eastern States. There is no guess work about it; each patron knows just what the dividend is. All have an interest, but none greater than the factoryman; his reputation is at stake, and often times his all in property. The commission is best, and comes the nearest to exact justice. The factorymen must guarantee the product; patrons must be made whole and pay for no blunders. The quality should always be good. We are now improving much faster in the line of butter making than cheese making, and this is the natural consequence; cheese must be made by outside factories while those with better facilities must make the butter. Our superior advantages for butter making were fully established by the Centennial exhibit of dairy products, when the West received eleven out of the fifteen prizes awarded.

The West was fast surpassing the East in dairying. Every thing seems to be in our favor. As a whole our land was better and far cheaper, and the freights are in our favor, as it costs only one half cent per pound more to put butter into the New York market from Elgin than from Central New York. With cheap lands, cheap feed, and abundance of good water, it would seem that the future prospects of our dairy interest were good. Fresh creamery butter would at all times command a good price, while old would always be a drug at low prices. All goods should be sold when ready for market.

Hon. WM. PATTEN, Sandwich, said a great deal depended on taste, as to price; he sent some finely made colored butter to Chicago market, and received thirty-three cents for it; by request he sent some uncolored equally good, and received only twenty-three cents per pound. He concluded that if one sixth per cent. used in coloring added nine cents to his profits they might have the coloring.

"The best plan to avoid the low prices which usually prevail for butter and cheese during the summer months," was opened by Dr. Stone, who said the essential points of this question were embodied in the first. It was an important question, and if anyone could help us out of this dilemma he would confer a great blessing upon the dairymen. When milk sells for fifty cents per hundred pounds in July, and a dollar and a half in January, something is wrong. If it were not for that *reformed* taste, we could hold the summer product for winter prices; but as it now is, let the dealer hold summer products for six months, and he will continue to hold them the rest of his lifetime. Taste is the thing at last. People will not eat old cheese or butter. The only way out is to make more milk in winter, when everybody wants it. Would make most when demand is greatest. In June and July milk is always low, in January it is always high; and the butter wanted is not to be had—*i. e.*, good butter. Poorly fed cows in winter make poor butter. If a winter article is made, cows must be well cared for and well grained, or the product will be as poor as July.

Mr. Patten would like the experience of some practical winter dairyman.

E. G. KETCHUM was called for, who said he had never kept exact figures as to the net profits of a winter dairy, but was in favor of winter dairying.

E. H. Seward had kept a winter dairy. Thought it more profitable than a summer dairy. Milk is richer in winter, with better yield and better product. Much less cheese is used in warm weather while fruit is being used. We are certainly making a poor article of cheese when we skim grass milk.

It costs more to make milk in winter than in summer, and we get more for it and have more time to take care of it. Feed always pays. He believed it cost one-sixth more to make milk in winter than in summer. Hay must be cut for winter, while in summer the cow cuts her own hay. The manure made by a winter dairy was very valuable, while that made by a summer dairy was in a great measure lost.

Prof. Hall, of Sugar Grove, said he considered it a fact that we never throw away feed if the cow is a good animal. It takes a certain amount of feed to run the machine, and all feed beyond that amount gave a return. If the animal was worth feeding, it would seem that the winter season would yield the best profit. If butter is higher in winter, then make winter butter. He believed the same feed in winter would pay better than in summer, provided the animal was a good one and well kept.

Dr. R. R. Stone thought we were destroying the cheese market. Would rather have a skimmed cheese in December than a full cream in August; it would actually be a better cheese. The fact is, in winter no really good cheese are to be found. He feared the consumption would be materially lessened.

T. S. Huntley thought cows could be wintered cheaper than summered. It took so much land, and winter labor was much cheaper.

J. R. McLean wanted to have some figures from a practical winter dairyman.

John Keating thought that neither winter nor summer was most profitable, but a combined summer and winter was best and most natural. Had sold to the condensing company for seven years. Thought summer milk had paid him the best. No two farms would yield alike. Some had more pasture than others. He fed in summer during drought. If he fed grain summer and winter it would be hard to decide as to summer and winter profit It was a question of climate, drought, and many other local causes.

J. R. McLean thought to avoid low prices we must sell our product just as soon as the market will receive it. If held it closes the market. Must sell as soon as made.

D. C. Snow, McLean county, came to learn, but not to talk; but thought everyone having real, practical experience, should be willing to give it. He thought to make milk during the whole year the best plan would be to have his cows come in in December. Fed meal during the whole year, often as high as a peck per cow a day. It always paid to feed good milch cows.

Judge Wilcox said practically to have a dairy come in just as you desired had proved a failure. No one could calculate with any degree of certainty as long as so many calves are lost We can not buy good cows to keep up our milk in winter. To fill the place of every cow sold to a butcher occasioned a loss of fifteen dollars, at least. It was all well in theory, but not in practice. Had lost twenty to thirty calves in one dairy of forty to fifty cows. Could make no plans with any certainty.

J. Smallwood, Freeport, wanted to learn. He wanted to know the exact cost of making milk in winter as compared with summer. He thought the winter dairy much the best Would have two-thirds of his cows come in in September, and remainder in winter. Needed the sour milk in winter to feed pigs, as well as in summer; but the exact difference between the two seasons was what he wanted to know.

"Manure, How to Care For and How to Apply it," was taken up, and John Keating, of Elgin, delivered the following interesting address on the subject.

JOHN KEATING'S ADDRESS.

The subject of the present paper is one of the most important, perhaps *the* most important connected with the science and practice of agriculture. So important is it, indeed, that all experience has shown that on it, more than on any other one thing, hinges the failure or success of the agriculturist. The man who makes a large quantity of rich manure, and applies it properly, can not and will not fail of being successful. *Per contra*, the man who is careless on this point, who feeds his cattle poor and insufficient food, who allows his manure to be swept away by the winter's winds, and dried up by the summer's sun, though he may rise early and labor assiduously, is destined to failure and disappointment.

Time was, and that but recently, when this subject received very little serious consideration from the majority of the farmers of Illinois. The doctrine was then taught that the fertility of our prairies was inexhaustible, and that although in the East manure was indispensable to a crop, that in the West the happy farmer was freed from this laborious and expensive necessity. That time is past, and past forever. The fertility of our State is yet unimpaired. She yet bears crops of grass and grain which may challenge competition with those of any other State; and the secret of this continued fertility is, that the farmers of this State are fully awakened to the necessity of caring for their manures and properly applying them to their lands. It is impossible, in a limited article of this nature, to more than glance at the most important parts of this vast subject. How vast it is, and how much may be written on it without exhausting the subject, few realize. However, I shall not attempt to dwell on the subject in the minute and scientific manner with which Eastern agriculturists are familiar. I shall say nothing of mineral manures, or of artificial manures, of green manuring or of sewage manuring. I shall avoid all mention of super-phosphates and nitrates, of chlorides and sulphates, and shall confine myself to that of which I know something by actual experience; to that which I am convinced is the most important to Illinois farmers, the production, care and application of barnyard manure.

In the production of barnyard manure it should be the aim of every farmer to produce as much as possible. We want a quantity of fertilizing substances to cover our broad acres, and to make any recompense to our lands, for the abundant crops they bear us. This is one of the great difficulties with which we have to contend. Our farms are so large, and generally so insufficiently stocked, that it is impossible for most of us to produce annually anything like the quantity of manure that we so earnestly desire to use. The first thing, therefore, that we should do, is to stock our farms as heavily as the land will support, or as we can afford to buy, even if we were obliged to buy some extra grain to winter them. Having done this, we should remember that it is not alone in bulk that the value of manure consists. We should remember that quality is even more important than quantity. In order to get rich manure it is necessary that we feed our cattle nutritious and abundant food, and keep them in warm and comfortable barns.

The richer the food we feed the better will our manure be, and the difference in value, load for load, between the droppings of half starved and poorly kept animals, and those of others who are generously fed and warmly housed, is much greater than is generally supposed. Corn-meal, oats and bran, with good tame hay will make, I think, the best article that it is possible for us to get. I would here recommend the use of straw or cut cornstalks for bedding; they will absorb the liquid manure which would otherwise go to waste, and which is very valuable. There is also this advantage, that where we pile our manure and use much straw that there is no danger of losing ammonia by fermentation; the acids produced from the fermenting straw will hold all the ammonia found in the heap. What we want is good manure, and the richer it is and the bigger the pile the better.

The next point is to properly care for our manure, and this is a point that needs to be well dwelt upon. This indeed may be said to be our weak spot. Many of us make large quantities of rich manure, and then through carelessness suffer it to go to waste. Fortunes have been lost in this manner, fortunes are being lost by it now; the richness that would fill our corn-cribs with grain, our barns with hay, our pockets with greenbacks, is being swept into our rivers or absorbed by the air. Our cattle should not be allowed to range all over the farm in winter. They should be kept, when out of the barn, in a close yard where there is an abundant supply of good water, and where all the coarse feed of the farm which is not fed in the barn should be brought to them. This yard should not be exposed to running water; and the manure which will accumulate in it should at intervals be made into large piles, where it will ferment and decompose, and become fit food for plants. Manure cellars and sheds I do not speak of, because I believe that if we pile it in our yards or elsewhere where it is not exposed to water from roofs or running streams, the natural rainfall will be beneficial rather than detrimental to it, by assisting the decomposition and fermentation of the mass.

We now come to the application of manure to the soil, and here indeed we have a diversity of opinions. Some recommend to apply it in winter, others in spring, others again in autumn. Some would plow under green manure, others would top-dress grass lands with it, when well rotted. Those who advocate the hauling and spreading of green manure on grass lands during the winter, argue that the surface of the land is protected from sudden changes during the winter, and the first thaw carries the manure to the roots, where it causes a vigorous growth early in the spring. If the ground is plowed for a spring crop, it is also benefited by having the manure ready to be absorbed by the soil as soon as the ground thaws; the seed, as soon as it sprouts, finds what it needs close at hand.

They also argue that it is cheaper to haul it during the winter, when work is slack, and that by this course we escape the waste of manure in the yards. In answer to this it is said that in thawing manure upon frozen land much of it is carried off in spring by rains, particularly if there be much fall to the land. In hauling out green manure it is certain we haul out a great quantity of water—some estimate it as high as eighty per cent.—which is a waste of labor. I will simply say that from my own experience, which is limited, and from what I read of the experience of others, I am decidedly in favor of piling manure until it is thoroughly decomposed, and then of applying it as top-dressing to meadow land as soon as possible after haying.

In applying it at this time it will promote a vigorous growth of after math, which is valuable both for food for cattle and as a protection to the meadow in winter. Plants will not take up manure until it is decomposed. If applied in a fresh state to the soil, it must decompose in the soil before it is of any use to the plants. This takes a long time, especially in clayey land. Manure acts *quicker* for being fermented before being applied to the land. If you apply it to the land and it is not taken up the first year by the plants, the ammonia, phosphoric acid, and potash, enter into combination with certain ingredients in the soil, become nearly insoluble, and it takes time to get them back.

It is objected to top-dressing that there is a waste by evaporation; but the experiences of many years have shown that in top-dressing meadow land with well rotted manure, that there is no waste of anything but water, of which all barnyard manure contains a great deal. Again, it is said to give the grass a rank taste; but if it is well spread and thoroughly harrowed in, as it should be, this taste will be found not to exist. Another advantage of applying it in a well decomposed condition is, that it is reduced nearly one-half in bulk, we do not need to haul so much water, and at the same time its plant food is rendered more soluble.

John Johnson, of New York, who is a very high authority in such matters, says in the New York *Agriculturist*, that he has "found by actual trial, that one load of well rotted manure applied as top-dressing to grass land in the autumn, and the land plowed up and planted to corn in the spring, is worth as much as three loads of fresh manure plowed under.

E. H. SEWARD, Marengo, related some experiments made with various fertilizers by the Kishwaukee Club, of Marengo, Illinois. These experiments constituted several varieties of manures: barnyard, green and decomposed, plaster, salt, bone-dust, and ashes, put upon equal amounts of ground, with varied results, the test crop being corn, with the yield produced greatly in favor of salt as a fertilizer, the salt costing but four dollars per acre, while the barnyard manure cost eight dollars.

HON. WM. PATTEN said such experiments were of real importance, and afforded great satisfaction. Too much guess work had been indulged in by the farmer. He should know exactly the results of his labors. He had thought to draw green manure to the field the best plan. It always gave a good crop the second year. Did not think it best to let manure lie in yard over summer.

E. H. SEWARD, in regard to the experiment, maintained that exact accounts had been kept, and corn weighed.

Prof. HALL wanted to know if manure lost by evaporation.

JOHN KEATING thought that exaggerated. Thought it lost nothing.

WM. PATTEN thought manure piled in large piles would heat and burn out its value as a fertilizer.

Mr. KEATING said horse manure should not be piled, as it would heat and become worthless.

S. N. WRIGHT had had much experience with manures. Mineral manures acted as stimulants, and when once used must be kept up. It was like a man under the influence of liquor. When its strength was spent the land would run down. Barnyard manure was best. He piled his manure and spread on grass land. Had good results from fresh manure.

J. R. McLEAN would put out manure when green. For top-dressing he preferred fine manure, but for deep culture, green, plowed in.

E. G. KETCHUM thought what would apply to one farm would not to another. He took out his manure direct to the field, with as much water as possible. Thought this the best plan.

WM. PATTEN thought drainage had much to do with the product. He had three miles of tile; it was the best manure he had ever used. His land was clay subsoil. Tiling was the best investment a farmer could make. It costs about one dollar per foot, when down.

On motion, a committee on finance was now appointed, consisting of J. R. McLEAN, E. H. SEWARD, and B. COX. After voting to continue the last question to-morrow, the convention adjourned to meet at 9 a. m.

WEDNESDAY, 9 A. M.

Convention called to order, when Question No. 4 was taken up and discussed.

Hon. WM. PATTEN wished to hear from some one having experience with liquid manures.

Dr. J. WOODWARD, of Marengo, said he was a learner, and wanted to get facts. He added dressing and deposited in a plank box; let freeze and spread it upon the land in the spring. Did not approve of keeping manure in yard during summer—it will evaporate and lose much of its strength. Top-dressing was the best plan; even corn land should be top-dressed; it does not interfere with cultivation.

C. GILBERT, Union, said to draw out in spring was best. Did not like to top-dress for corn; it expended its strength in the sun; plowed shallow for corn. Liquid manure can only be saved by piling, unless great expense is incurred; it is best to draw out in winter.

Hon. WM. PATTEN drew out as fast as made; planted three courses of corn to each coat of manure; to draw out as made was the best plan to save the liquid manure. In summer milked in stable, and the urine was wasted; would like to know its value; could cisterns be used to collect it, and then pump it out? it is strong, and must be a powerful fertilizer; thought some kind of bedding might be used as an absorbent.

Dr. WOODWARD gave experiments made by Kishwaukee Club with various fertilizers, used upon three acres of land. Had taken old corn land, split the rows, put in liquid manure, and harrowed crosswise; drilled in the corn, and received fifteen tons of cured corn-fodder per acre, much of it growing thirteen feet high. One team could haul sixteen loads per day a distance of 360 rods. To use eight loads per acre, this plan, is better than sixteen loads per acre scattered upon the surface. Raised the best corn by this plan he ever raised;

it was clean and easy to cultivate; it cannot evaporate; always plants in drills; uses horse planters.

H. W. **Mead** had always plowed deep to avoid evaporation. Would always plow all the land; did not like the furrow plow; it washed more than ordinary plowing, especially on rolling land.

C. H. **Larkin** was called for. Had not matured any thoughts upon the supject. It was certain that all plant food must be made acceptable to the plants, or it would do them no good —in fact, would not be received by them; and it must be applied so that the plants can easily obtain it. He, like many others, was running in the old rut. Barnyard manure should be housed; had experimented; housed manure was the best; all its properties could be saved in no other way, especially to use for small grains; for grass lands it is best to take to the field as fast as made. But few farmers had the means to properly protect and care for manure. Multching direct seemed to produce the best results; climatic changes had much to do with our grasses; grass roots were sensitive, and took up fertilizers readily.

Israel Boies had changed his views in regard to manures; had always supposed fine manure best for corn—had made a mistake; should have been on grass land; he now believed to draw direct from the stable to the land the best plan; it leached and wasted if allowed to remain in the yard. He now saved his liquid manure, using a cistern; could dip or pump it; his gutters descended to cistern. August and September was the best time to apply manure.

D. **Brumback**, Gilman, thought manure from well fed cows much superior to that of poorly fed cattle; it was to pigs as cooked feed. Would like to hear from those of more experience.

D. C. **Scofield** thought it an important question. We, as farmers, want a great deal of manure. Lime mixed with barnyard manure would ruin the whole pile, by heating; used to burn all the straw. Had seen a handful of straw put in each hill of corn, and the result was ten days earlier corn and better crop. One load of leached ashes on our land is worth four loads of common manure; night soil is still more valuable; in New York it is a great commodity; all farmers near large cities buy it to mix with common manure.

C. H. LARKIN was glad to hear of the use of lime as a fertilizer; would like the facts and reasons; why lime put in common manure piles would ruin the whole.

D. C. SCOFIELD—it burns itself to death; was not worth drawing to field.

C. H. LARKIN still wanted the facts and the reasons. To travel the same old road every year was a slow way to improve. Had used muck manure; it compared favorably with other manures; the immediate result was good; did not think it lasted as long; but owing to its convenient location in many places its claims should not be ignored by the farmer.

D. C. SCOFIELD had used muck; his mode was to put in large piles, and when rotten was applied to orchard; it lasted well; was a natural food for plants; was in favor of muck; it was purely vegetable; had used it for onions, which grew four times the usual size.

THOS. S. HUNTLEY thought to take out green manure was a great saving; it gathers nitre, which is beneficial to plants; all its properties are saved; it was certainly best to draw out fresh; in the East they manure in the hill; could raise ten bushels more corn per acre by this plan than to scatter broadcast.

THOS. BISHOP thought to let rot in heaps was best; drew all his poor hay and straw into yard; August and September was the time to put upon the land; always tried to make all he could; to draw in heaps in field when help was cheap was economy.

T. HUNTLEY had put manure in furrows when plowed; was a good plan; also plowed in straw; might not be good in dry season.

C. H. LARKIN had put fresh straw from machine on grass land with good results; tasted well. Wanted to know the scientific reason for the use of lime on our soils.

Thos. Bishop thought frozen manure in winter could not be handled to advantage.

Dr. Woodward had used plaster mixed with one-sixth lime; produced best wheat; as to applying with common manure, it drove off a large amount of water, thus burning the whole to death; if lime is used it should be slacked.

Prof. Hall said it was a fact that lands differed greatly in their elements to produce plant life; as to which of the many fertilizers was best for all soils, it was hard to tell; lime mixed with other manures tends to liberate ammonia, which is good for plants; lime of itself is not good, but as an agent, is useful.

E. H. Seward thought our soils by cultivation had exhausted the alkali left by the prairie fires of an early day, and that want must be supplied before we can again raise good wheat.

Prof. Hall promised to make practical experiments on corn, and find out "the one thing needful."

Mr. Huntley said at Salt Lake, where the soil abounded in alkali, and beans would not grow, all crops were good.

Dr. S. M. Slade put upon six acres of land 800 bushels of ashes, one half leached and the remainder unleached; could not perceive any difference as to fruit; had also tried lime from gas works which had been used for purifying; result, seventy-five bushels of corn per acre. Could detect little difference between the various fertilizers.

C. H. Larkin wanted to know if the alkali had not prevented ruin to soil, etc.

Dr. Slade could not tell all the results of applying alkali.

D. C. Scofield had had great experience with ashes; could not arrive at the exact difference between leached and unleached; was surprised to know that there was 400 bushels of old ashes in the town; would advise all to use them; he believed them to be the surest and quickest fertilizer used.

AGRICULTURAL
EXPERIMENT STATION.
JAN 11 1890
UNIVERSITY OF ILLINOIS.

S. M. Slade said a certain piece of land enriched by the use of ashes thirty years ago, plainly showed the results to-day; in that locality they were bought by the ship-load—three cents for leached and eight cents for unleached.

Dr. Tefft said to know exactly how to apply ashes we must know exactly all the constituent elements of the soil, and this can only be obtained by chemical analysis.

Henry Sherman had destroyed foul strip by fire, and had seen good results from the ashes left, by an increase of crops on the lands so burned; believed in ashes.

Hon. Wm. Patten thought that ashes, as a fertilizer, took first rank; come to this conclusion by planting crops upon land which had been run over by fire. Farmers were too apt to continue year after year in the same old way; we must try experiments and obtain information from actual experience; had learned much at this convention; it was evident that what was good for one farm was not good for all farms; we must sift the chaff from the wheat, holding fast to the good.

Topic No. 5. "The best method of improving and supplying the dairy. Different breeds, and their adaptation to our climate."

Hon. Wm. Patten opened the discussion of this question by saying he had devoted a great deal of time and money to improving his dairy; considered the selection of a bull as important; had bred and used the short-horn stock with satisfactory results. There was great difference in the short-horn families as to the milking qualities; often had to "weed out" several each year to secure the best. Several years since he introduced the Holstein blood into his herd; could plainly see the effects yet by their excellence as milkers; only bred from the same strain about five years; thought Holsteins, as milkers, stood in the first rank; also was partial to milking families of short-horns. Some bulls would, if used for many years, destroy the milking qualities of your herd.

E. H. Seward, Marengo, thought the old Durham stock would not, as a race, be called good milkers. The Kentucky stock, of Clay importation, were poor milkers; they were a beef family; the "mahogany red" are perhaps the best. Dairymen should also have an eye to the beef qualities, or they would lose much; large cows do not consume any more feed than small ones. Had no experience with Ayrshires; Alderneys gave a small flow, but rich in cream and butter; but as a class we look more to quantity than to quality; would not recommend the same class of cattle to all farms.

C. Gilbert, Union, thought this question had been fully discussed in the Northwestern Association. He cared not for breed; it was a mere matter of selection; all breeds produce some good milkers. As to Durhams, calves three months old sell for eighteen to twenty dollars; same with Holsteins; can find just as good cows among native stock as among thorough breds.

D. C. Scofield thought the Bates blood of short-horns th best; should come in at two years old, and learned to b milkers young; should come in at flush of grass to make arge udders; of this family, nine out of ten come in at two years old, in which case one is worth as much as two to come n older; would select calves from best bulls as well as best ows; had bred one half blood Durhams; were one-third arger and worth more money; calves should be well fed from eginning to maturity; full as much depends upon the male s the female.

Prof. Hall. The cow machine requires a certain amount f feed to keep it in operation, even though it accomplish n vork in the production of milk or meat. Any portion o ood that may be consumed and digested beyond this amount, s what gives to the farmer his profit. But the cow that con-erts a large portion of this surplus food into fat, will not ave so much left to put into the milk pail. This is jus hat the short-horn cow does; consequently this cow can ever excel as a dairy cow. If she should excel in this direc-ion she would not be a first-class short-horn. Those with hom this valuable breed is a favorite, laugh at the Jerseys. hey can see no beauty in a cow unless she be loaded wit fat. They would not have one of the "scrawny Jerseys" in their herd. But, my dear sirs, the Jersey makes herself "scrawny" by putting a large proportion of the food given her into the milk pail, instead of upon her back. Therefore she is a better dairy cow. Not only does the Jersey cow do this, but she converts a wonderfully large proportion of her food into cream globules. Therefore she is exactly adapted to the butter dairy. "But," says my friend who breeds short-horns, "what is your cow worth when you are through milking her?" The question is unimportant to the butter dairyman. If I can find a cow that, upon the same amount of feed, will make annually fifty pounds of butter more than the average will make, and if I milk her ten years, I will have 500 pounds of butter, worth $125, to compensate for the difference in the value of the carcass, which will not be more than fifteen or twenty dollars. "But," says one, "will the Jersey cow do this?" I believe she will. It must be borne in mind that the short-horn machine is much larger, as a rule, than the Jersey machine; consequently much more food will be required to overcome its friction, and much more food will be consumed in a given time. Hence we do injustice to the Jerseys if we compare the product of a 700 pound Jersey with the product of a 1,500 pound short-horn. Now, not having been appointed to discuss this question, I am not prepared to present figures; but any comparison instituted between these two breeds should regard the food consumed and not the number of animals. Again, not only is the quantity of the product of the little Jerseys remarkable, but in quality it is superior to the butter product of the "beef breeds." With the same feed and the same care, Jersey butter made in January will be several shades better color than the product of the short-horns or natives. In August, with the same treatment, Jersey butter will be much firmer than butter made from the milk of other breeds. The average Jersey cow will give milk more days in the year than the average cow of any other breed. A cow in my herd gave us five pounds and three ounces of butter during four days in July, 1875. Five weeks from that time she dropped a calf which she had carried nine months and two weeks. From the milk of Oceana (herd book No. 439), we made one-half pound of butter per day two weeks before she dropped her calf in May, 1875. The calf (a bull) readily sold for twenty-five dollars when three days old. From these figures, and others which I have made from time to time, and from comparisons instituted between the breeds, I am led to this conclusion: We want the short-horns for beef, but for the butter dairy give us the "scrawny little Jersey," that puts her surplus feed into the milk pail, and *not upon her back.*

On motion of J. R. McLean the election of officers was made a special order for half past two o'clock this p. m.

On motion, adjourned to meet at 1:30 o'clock this p. m.

Wednesday, 1 p. m.

Convention called to order as per adjournment.

On motion, Wm. Patten, C. C. Buell and Thos. Huntley were made a committee to recommend suitable persons to act as trustees in the several counties represented, and to report to-morrow.

E. H. Seward spoke further as to breeds for the dairy; by a test at Marengo the short-horns took the premium.

Prof. Hall thought the experiment had not been carried far enough; he had made an exact test in his case The Jersey was much ahead; had large cream globules which rise easy.

Dr. Tefft said he believed the globules of Jersey milk varied more than any other breed; to make an exact test of milk, all the circumstances must be known—time of churning, etc.

No. 7—"Marketing Dairy Products," was now taken up and opened by J. R. McLean, secretary of the Elgin Board of Trade, who gave many interesting statements as regards the sale and management of dairy products. He said to a few men in Elgin belongs the credit of building up the dairy interest to its present importance, and establishing the Elgin Board of Trade. It was evident that the board system was the only true one. To sell the vast amount of cheese produced in the Northwest by the old plan occasioned a great loss in shrinkage, and poor pay; five per cent., at least, was lost in weights. The saving by the board plan was of itself a nice dividend to patrons. Many attempts had been made to break down the Elgin board, but had so far ended in more firmly establishing it. The only expense to members being two dollars per annum, to make this great saving. Mr. McLean here gave the following figures as the transactions of the Elgin Dairy Board of Trade, since its organization:

1872.	Total sales butter and cheese..............................				$ 81,000 00
1873.	"	boxes cheese,	40,629—1,726,316 ℔s;	butter, 62,061 ℔s.	219,177 53
1874.	"	" "	65,025—2,955,202 "	" 136,426 "	368,528 58
1875.	"	" "	87,405—3,970,786 "	" 226,175 "	496,220 04
1876.	"	" "	127,356—5,177,730 "	" 829,267 "	767,640 68

From the above figures it will appear that the transactions of the board are nearly ten times larger than the first year; no other evidence is needed to convince any farmer or dairyman in which direction his interest can be best cared for.

On motion of M. H. Thompson, the members of the press present were made honorary members of the Association.

The report of H. W. Mead, treasurer, was read, received, and filed; it showed $42.25 in the treasury, with no bills to pay.

The special order for 2:30 p. m., the election of officers, was now taken up. The chair appointed J. R. McLean and E. H. Seward as tellers.

A ballot was taken for president, which resulted in declaring Dr. Tefft unanimously elected.

The selection of three vice-presidents was now in order, when, on motion, the secretary was instructed to cast the entire vote of the Association for Prof. F. H. Hall, Dr. J. Woodward, and C. C. Buell, who were declared unanimously elected.

On motion, ISRAEL BOIES was instructed to cast the entire vote for M. H. THOMPSON for secretary, and he was declared elected.

On motion, C. C. BUELL cast the entire vote for H. W. MEAD for treasurer, and he was declared elected.

The following county trustees were elected, whose duty it is to gather dairy statistics in their respective counties, and collect such other information as may be of use to the Association:

Kane county—J. R. MCLEAN, R. P. MCGLINCY, E. G. KETCHUM.
Cook " —HON. JOHN WENTWORTH, DR. KENNICOTT, A. H. DALTON.
Boone county—Judge L. W. LAWRENCE, B. CORNWELL, T. E. MUNN.
Iroquois " —DAVID BRUMBACK, W. E. KIMBLOE, W. H. MANN.
De Kalb " —Hon. WM. PATTEN, DEXTER SEVERY, A. LOVELL.
Ogle " —ISRAEL BOIES, Byron; JEREMIAH DAVIS, Junction; WM. BAKER, Junction.
DuPage county—DAN'L DUNHAM, IRA ALBRO, PETER PRATT.
McHenry " —E. H. SEWARD, Dr. J. WOODWARD, T. McD. RICHARDS.
Stephenson " —JOHN SMALLWOOD, S. F. HENDERSON, JOHN SWENZA.
Clay county—THOS. WILSON; B. B. INGRAHAM, Gen. L. B. PARSON, Flora.
Whiteside county—JAS. HOWLAND, ROBT. GALT, JOSHUA ANTHONY.
Knox county—A. G. MILLER, Oneida; S. C. WOOD, C. J. FERRIS, Galesburg.

Topic No. 10—"How can we improve the dairy interests of Illinois?"—was now taken up, when ISRAEL BOIES, of Byron, read the following paper:

MR. BOIES' PAPER.

How can we improve the dairy interest of the State of Illinois?

First, by making it pay better—better cows, better care, and last but not least, better manufacturers. All the cows of the Northwest only average about 3,000 pounds of milk each. This does not pay. There is not a thinking, figuring man in the State who would go into dairying if he thought he could do no better. There are men who do far better. How do they do it? First, by selection of cows; next, by care; anything that is worth doing at all is worth doing well.

It costs, in the ordinary way of keeping a cow, twenty-five to twenty-seven dollars per year; will 3,000 pounds of milk pay this bill? Forty-two dollars and a half will keep a cow first-class a year, and that cow, if a good one, will yield you six to eight thousand pounds of milk. The sooner a poor cow—I mean a poor milker—is converted into beef, the better for the owner. No man can afford to milk a poor milker; no man should be satisfied with a less average of his entire dairy, than an average of 7,000 of good milk. Far better to have an average of 10,000 pounds. This last point will never be reached without great care and the choicest food, and no poor milkers.

The manufacture of milk here is a great waste. Three-fourths, and perhaps more, of the milk of the State of Illinois is manufactured on a percentage. This, in my opinion. is all wrong for the producer. Every manufacturer should buy his milk at a given price, and then if he does his business poorly it is his own loss, not the producer's. It now takes in the State of Illinois nearly eleven pounds of milk to make a pound of cured cheese; and twenty-seven to twenty-eight pounds of milk to a pound of butter. Part of this is chargeable to the producer, but a large part is chargeable to the manufacturer. Nine pounds of milk ought to make one pound of cured cheese, and twenty-three pounds one pound of choice butter. Now figure the difference in the net proceeds of one cow, and you will be astonished. It will make over ten dollars per cow, or $10,000,000 on 1,000,000 cows. I have not a doubt that the dairymen of the State of Illinois lose by bad management of their cows and the bad management of the manufacturers, $5,000,000 every year.

Thus now, if our associations can suggest, and the dairymen improve by their suggestions so that one-half the above sum be saved, we are amply paid for all our time and effort.

C. C. Buell had no figures; he coincided in the main with Mr. Boies; he thought it might be possible to make a pound of butter from twenty-three pounds of milk. The cows in the Northwest, as a whole, are "scalawags;" they are not what they ought to be; breeds have much to do with it; must look to improved methods of manufacturing; in New York the factory system was carried on with poor apparatus and no conveniences; if poor in that old State what must ours be in a new State? Many improvements can yet be made in buildings, apparatus, and breeds of cows, all of which will tend to improve our interests.

No. 8—"The best and cheapest feed to keep up the supply of milk during the summer drought," was called for, and S. W. Kingsley said he believed sowed or drilled corn or Hungarian grass the best article of food to keep up the milk during a dry time; this was the cheapest and most convenient for the farmer to resort to; he fed bran and meal all summer;

believed feed fed to good cows never thrown away; if green feed can not be had in season, grain was the only substitute he knew of; would always feed well.

T. Bishop said it was some time since a drought; there are many ways to make milk in a dry time; could not make it rain or make the grass grow. When milk is at four to six cents per gallon, it makes but little difference whether the flow is kept up or not; many farmers kept too much stock for their pastures. There were two sets of men in this convention to please; supply and demand was the great thing after all; must make the product scarce; we make too much —four to eight cents per gallon for milk! must not keep forty cows with only pasture for twenty; do not take to factory; it takes one-fourth of the whole to have it worked up; it costs no more to run a factory than a farm; we must lose one-fourth of all our milk on this factory plan; commission business in in the cheese business was a bad business. Our milkmen's wives, like blacksmiths' horses, go poorly shod; milkmen use no milk in the family, they are too poor; all must be sold; the men work from 4 a. m to 9 p. m.; no class of men work harder on poorer pay. The fact is, the product must be made scarcer; must buy less scalawag cows; we are no better off than when we had no cows.

S. N. Wright thought the question of feed was important; his bread and butter came from his cows; did not think it a good plan to pasture meadows; must not turn on pasture too soon in spring; wait till there is plenty of grass, so as to keep cows from roaming around the lots.

C. C. Buell did not think Mr. Bishop's argument good practical economy; the object could not be accomplished by making the product scarce, but by making it better, and by raising it cheaper; one will grow rich while another will grow poor, by merely producing cheaper. If we are to make our product scarce, we had better quit at once. We must make dairy products plenty, and learn to produce them cheaper; if we can produce cheaper than other places using higher-priced lands, then we will always have the advantage.

Hon. **Wm. Patten** thought it the true plan to make a good article as cheaply as possible; it was like a railroad; it would create its own demand. Could not endorse the theory advanced by Mr. **Bishop**; to cheapen production is the true plan.

D. C. Scofield said that when the first dairy club was formed at Elgin some dairymen refused to tell what they knew about dairying, for fear some one would learn something. Then our region was not known for its dairy business; one wagon load would flood the market; now we ship by the ton and by the car load, all over the world, at prices which the early dairymen never dreamed of

Israel Boies thought winter dairies did not feel the summer drought as much as summer dairies, fed on grass; give the cows all the good feed you can.

No. 14. "Can summer butter be so handled and packed that it will retain its freshness and sweetness for winter use?"

C. C. Buell read the following paper upon this question, and also gave his experience as to using brine in packing butter in summer.

C. C. BUELL'S PAPER.

Can summer butter be so handled and packed that it will retain its freshness and sweetness for winter use?

If an affirmative answer to this question means that butter can be kept through summer and autumn retaining its sweetness and freshness so as not readily to be distinguished from fresh, sweet butter, we can not attempt to maintain it. We have never seen any such and should lack the first and and most essential argument in the case. Moreover, if we understand the accepted theories as to what gives the butter the peculiar aroma and deliciousness of the best made fresh butter, we should not expect on general principles they could be retained—at least only in a very slight degree. We shall have to leave to our associates, therefore, the task of maintaining the affirmative in this sense if they desire so to do.

Whether butter can be thus preserved so as to be good, sweet, old butter, without rancidity or bad flavor, is another question, which we believe can be answered in the affirmative, and we propose to discuss it under three heads, viz.:—as to the place of storage, the package, and the contents.

1. As to the place of storage:

The first requirement is that it must be a cool place. A cellar or other apartment the temperature of which rises above 60° Fahrenheit, we do not believe will keep butter well under any conditions. The past season has been peculiarly unfavorable in respect to temperature. The heated term was long and extreme. Most cellars showed a temperature from 65° to 70°, hence many parties who have heretofore succeeded in keeping butter in their cellars, have failed this year. On the authority of Mr. Reall, of Philadelphia, a dirt or bank cellar cooled by the temperature of the surrounding earth, is better than an apartment cooled by ice. A deep cellar protected from the hot rays of the sun and remaining uniformly below the temperature of 60°, sweet and properly ventilated, is without doubt one of the very best places of storage for butter.

2. The package:

Butter, to remain sweet, no matter what the temperature, must be preserved from contact with air. In mid-winter, even, butter exposed to the air will soon become bad; in summer this will occur in much less time. The perfect butter package, therefore, will be air and water tight. The butter must be immersed (surrounded) by very strong, pure brine—or possibly, as some recommend, by strong brine with a little saltpetre and refined sugar added. It matters little what the shape, size or material of the package is provided this object is attained. As it was intimated at the beginning of this paper, butter can only remain sweet, and must be expected to loose a certain aroma and freshness of new butter. No long kept butter can be expected to remain in the class of fancy butter. A fancy or expensive package, therefore, is hardly in place in handling butter of this grade unless it is really better than a cheaper one and is so accepted by the trade. Now we know of no style of package so acceptable to the trade in butter, all things considered, for accomplishing the end desired, than the old style oak firkin. Properly prepared by soaking in hot brine, afterwards in cold, and handled in the approved methods, we consider it quite as reliable as any other, and decidedly cheaper than any other we know of. We express this opinion with our present knowledge of the trials made in this direction.

3. As to the contents:

The first thing to be said under this head is that butter to keep must be good butter—butter well handled from the milking to the packing—and nothing but butter. It is well understood that rancidity comes from that in the butter which is not butter—from the buteric acid which develops chemically, and the development of which is greatly hastened by bad handling; by the presence of caseine, buttermilk, water or other foreign substance not butter. We are inclined to think that the apparent quality of butter when first made is not a sure indication of its keeping quality. A poorer butter for present use seems sometimes to outkeep a better quality. The minutia of different processes of making butter we can not dwell upon here, although coming within the purview of this question.

Possibly right here lies in large part the solution of this question. Relying upon authority we could recommend different modes of procedure as the best, each condemning the other. This whole subject is still involved in much mystery, and what we need most is data furnished by experiments systematically and carefully made upon which to base conclusions. To individuals this involves serious expense—too serious to be thought of if the work is to be done thoroughly and well. We know of no more proper and important object of State aid than an experimental station in dairying.

Prof. HALL wanted to know as to washed and unwashed butter.

ISRAEL BOIES did not think worked butter would keep as well; had tried to keep in ice, but failed; he was now trying a new plan, by means of a cold air duct; that he had hit the exact thing—kept at 35° in summer. The butter must be entirely free from buttermilk; one spoonful of milk will spoil a tub; would exhibit a sample next year, kept twelve months by this new plan.

N. ELDRED then read the following paper upon this topic:

MR. ELDRED'S PAPER.

MR. PRESIDENT, LADIES AND GENTLEMEN:—Change is written upon all things with which we come in contact. Some of these changes are for the better, some for the worse. The strawberry, that ripens in your garden in a few hours, goes to decay, while the winter pear, hard and unpalatable in autumn, by mid-winter, becomes soft, juicy and melting. So in morals. Men change, sometimes from bad to good, often from bad to worse. Friendships formed in youth often change to hatred; sometimes they grow and increase in strength with the rolling years, and become strong as life itself. Butter is no exception to this law of change. It, too, often becomes strong, and, like Macbeth's deed, rank. But strength in butter is not a quality to be desired. It will not draw more money from your merchant by reason of its strength.

"Can summer butter be so handled and packed that it will retain its freshness and sweetness for winter use?"

This question has been under practical discussion for the past century, and all these years have not been able to show us that it may easily and cheaply be done. It is this difficulty of the doing it that makes the end desirable of attainment. For, were it readily and easily done, the supply of choice table butter would be nearly uniform through the year, and winter prices would not greatly exceed summer prices. Yet I conceive its attainment to be very desirable, as a portion of the summer make would then be carried over to winter, and that portion marketed in summer would bring better prices.

How to do it is the question of the hour. In order to the attainment of this desirable end I deem four things absolutely essential. First, the butter must be well made. I shall not stop to define this term well made; every dairyman before me understands it, and dairywoman too.

Second, it should be salted with pure salt. Prof. Arnold—my friend Mr. Wanzer and others here may not appreciate the authority—tells us in one of his published articles that salt is only added to butter because it better suits our taste; that it performs no office in preserving the butter, except as the brine formed by the salt helps to carry off its impurities; but that the impurities of impure salt help to decompose the cassine and other foreign substances, some little of which is left in our very best butter, and thus instead of preserving the butter, helps to destroy it. I do believe this matter of pure salt is of vital importance to the butter maker, and more particularly if the butter is not to go into early consumption.

Having made the butter well, and salted with pure salt, the third essential is to so pack it as to entirely exclude the air. Chemists tell us that fermentation can not go on without air, hence the importance of so packing as to entirely exclude it. Our common butter-tubs will not do this; worm-eaten firkins will not do it; even the best firkins made will not do it perfectly.

Ferments go on more or less rapidly according to the temperature. The higher the temperature (up to a certain point) the more rapid the ferment, and the lower the more the ferment is retarded, down to near 32°, where it ceases entirely. I consider, therefore, the fourth essential point in preserving summer butter for winter use, to be, it must be kept at a low temperature.

I had a theory that if butter was put up in packages perfectly air-tight, it would keep, regardless of temperature, and I tried a little experiment the past summer to test this theory. I had two small tin cans made. The first week in July I filled them and sealed them with wax, I think air-tight. I purposely kept them through the summer at a temperature of 70° and over. I opened them two weeks ago and found them utterly spoiled for table butter, and I might almost say for any culinary use whatever. Now one of two things is true—my theory was fallacious or the cans were not air-tight, and I am now satisfied that the theory was not correct.

In preserving fruits, meats, vegetables, etc., by the canning process, we destroy all the spores (the active principle in fermentation) by heat. Not so in packing butter; they remain in the butter, and there is also air enough in the butter to carry on fermentation if the temperature be high.

We can secure a low temperature in our hot summer climate only by the use of ice. In Chicago and other cities they build immense refrigerators for the preservation of meats, fruits, etc., and the advertisements sent through the country by parties interested tell wondrous stories of their preserving qualities. I condense an item or two I gathered from the New York *Independent* of three or four weeks ago, which although not so remarkable as some of the statements we find in the advertising circulars we meet, (subscribed and sworn to) nevertheless will answer our purpose if they are true:

A Mr. Robinson, a dealer in eggs and poultry at an interior village in New York, has erected an immense refrigerator for the preservation of the articles in which he deals. It is an immense ice-house with the ice stored in the upper story. In the summer of 1875 he bought eggs sufficient to pack 2,000 barrels. These were packed in chaff and cut straw and stored in this refrigerator till winter, when they were marketed fresh and good. Several thousand turkeys were bought during the winter, and after being frozen were stored in this refrigerator till May, when they were marketed in fine condition. Apples stored in it in October, 1875, are to-day as sound as when picked from the trees. A bag of lemons is also shown which has been on storage all summer and the fruit is perfectly preserved.

This aticle is probably an advertisement and exaggerates somewhat, yet I have no doubt but that butter may be kept in this way below 50°, and that would aid very greatly the keeping of summer butter for winter use.

During our nine years' residence in Iowa, it was our practice to buy (about the first week of June) butter sufficient to last us a year. My wife would pack it in stone jars with a little brine on top of the butter. The bottom of our cellar was gravel and I used to set them down in the gravel, so that the top of the jars was but little above the cellar bottom, and we never had a jar of poor butter. One spring we had a jar left over, and I sold it to the same merchant I bought it of—buying at fifteen and selling at thirty cents. And one season we summered over a surplus jar and used it the second winter in February and March, and it was good. Gen. Wilson, at that time editor of the Iowa *Homestead*, took tea with us one evening while we were using that butter, and remarked two or three times during the meal, "What beautiful butter you have. Why, I can buy no such butter as this in Des Moines." The fact that summer butter has been kept fresh and sweet for winter use is positive proof that it can be so kept.

To recapitulate: The four essentials for preserving summer butter for winter use or markets, are: It must be well made. It must be salted with pure salt. It must be so packed as to entirely exclude the air. It must be kept at a low temperature. If any one of these four conditions are wanting your butter will not keep. Yet after all I believe the best way to keep summer butter for winter use is to keep it in the grasses and the grains you provide for your dairy stock, until near the time you wish to market it. Kept in this way it will never become strong.

J. SMALLWOOD, Freeport, packed 200 pounds in six-gallon jars; filled nearly full, and then completed with salt; when done, he buried the whole in the ground one foot deep. Opened it last Monday. The freshness was gone, but it was not ruined; sold the most of it. Would like to hear from others.

Dr. TEFFT said it was a well known fact that butter was spoiled by a vegetable growth of spores. The secret of keeping butter was to put it where spores could not reach it. Fresh meats could be preserved by placing in an air-tight box, then exhaust the air, and when it enters let it pass through cotton batting, thus admitting air but excluding the spores. Butter can be kept in like manner.

Prof. HALL again called for information as to washed and unwashed butter.

I. BOIES once received order for unwashed butter, but soon after received orders to send no more unwashed butter.

Prof. HALL had used linen cloth to handle his butter with; it worked well, but the same could be accomplished by washing, with less labor.

C. C. BUELL thought fresh water not as good as a weak brine; had tried lime water with bad results; had found brine the best in hot weather.

The convention adjourned, to meet for evening session at 7 p. m.

EVENING SESSION.

WEDNESDAY, 7 P. M.

Convention called to order as per adjournment.

The resolution of C. C. BUELL, tending toward creating a special committee to make dairy experiments, and ask the State for funds for that end, was now discussed, when after a long debate it was deemed not advisable to take such action, not believing that the dairymen would ever receive expected benefit.

No. 9. "Grasses. The best varieties for hay and pasture, as adapted to our climate and soils."

C. C. BUELL was called for, who asked to be excused, as he had no figures at present on this important subject.

The chair now appointed Prof. HALL, D. C. SCOFIELD, and Dr. S. M. SLADE, as a committee on dairy implements and apparatus, to report to-morrow morning.

E. H. SEWARD said as to grasses, it was an important feature in the dairy interest. We had taken but little interest in this question; most farmers could not tell one grass from another. Red clover was, on the whole, the best fodder we had; it gave a large yield; rooted deep, thus loosening the soil; does not exhaust the strength of the land so much as timothy; in dry seasons it kills out. Red top is best for low lands, but is not good for hay or dry feed. June and blue grass are one and the same thing; it appeared different on different soils. A variety of seeds should be sown upon the the same land; we could then tell which was the best adapted to any particular soil or locality.

C. C. Buell could not say much about grasses. Wild hay is said to be good for dairy use by some; he did not think so.

Wm. Patten did not exactly agree as to blue grass and June grass being the same thing. Dutch clover was good for dairy use; would like to see it in more general use. Orchard grass was also good, and produced largely, and was hardy and well adapted to our soils.

Prof. Hall thought that June and blue grass was one and the same thing. For pasturage we must use a variety of seeds, so as to have fresh feed at all seasons of the year.

Judge Wilcox had experimented with grass seed. Bought one bushel each of orchard, red top, and timothy; mixed and sowed in nearly equal parts. The next year he had a magnificent crop of *weeds;* had to plow it up, and of course lost his seed and labor. Hungarian was good for dairy use; cows would eat it in preference to timothy, or any other hay. Last year he failed entirely with Hungarian; worms cut it down. Clover and timothy are the best for hay of anything he could find; must not pasture meadows too close, it is better not at all.

Prof. Hall inquired if anyone had cut timothy before heading out, and with what results. He had once cut two crops in one year; found it hard to cure.

Mr. Milsom, of Clay county, wanted to know how much hay per acre was considered a fair crop; raised a large amount of red top in his county, more for seed than for hay.

Topic No. 10 was again resumed, when G. P. LORD, Esq., of Elgin, read the following paper:

G. P. LORD'S PAPER.

MR. PRESIDENT AND GENTLEMEN OF THE CONVENTION:—"How shall we improve the dairy interest of Illinois?"

The importance of this question will be felt if we consider the vast amount of money invested in the dairy business. We have no statistics showing the amount invested in the State of Illinois.

It has been stated that there are 1,022 butter and cheese factories, 460,000 cows, and 1,380,000 acres of land in the State of New York devoted to this interest.

If the factories are estimated at $5,000 each, the cows at $40 per head, and the land at $50 per acre, then we have a total sum of $92,720,000 invested by the dairymen of New York. If to this we add the value of the horses, wagons, agricultural implements, etc., required for the prosecution of this branch of industry, we shall find it will amount to at least $100,000,000, which is invested in dairying in the State of New York. Adding to this the amount invested in the States of Ohio, Illinois and Wisconsin, and we find a capital of nearly if not quite $200,000,000 used in the dairy business in these four States, a fair proportion of which is invested in the State of Illinois.

How best to advance the interest of this branch of industry in this State is now under consideration. We shall be better prepared to devise means for advancing the dairy interest if we take a view of the obstacles and difficulties to be overcome.

One of these is the labor and expense of marketing the milk. This has to be done in seed time and harvest, mid rain and shine. If we take the average distance traveled by the dairymen in taking milk to the factory at three miles, we find that in the three hundred working days in a year he has traveled 1,800 miles, which is equal to sixty days' travel of thirty miles per day. Valuing this time at three dollars per day—the lowest price paid for man and team—and we find it has cost him in labor one hundred and eighty dollars per year to market his milk. To this must be added the cost of manufacturing and selling the product of the milk. The present charge for manufacturing and selling cheese is understood to be 2½ cents per pound. If we take the average product of the dairymen at six cans of milk per day, and allowing that each gallon of milk produces one pound of cheese, we shall find that it has cost $438 to manufacture and sell the cheese. Now taking these two items, the average annual expense in labor and money to each dairyman is $618. This with the interest at ten per cent. would in ten years amount to $9,000. Now if a dairy business be prosecuted on one farm by father and son for the space of forty years, the savings of these two items, with the interest at ten per cent., if treated as bankers treat their capital, would amount to over $200,000, which of itself would be a very handsome property to be divided among the children of the third generation.

Another difficulty in the business is in disposing of the milk. At times there is a great surplus; the factories are overtaxed; the market is overstocked, and the dairyman finds his milk on his hands, and as he has not provided himself with facilities for making butter and cheese, what he does in that line is done under such disadvantages that he is unable to produce anything but an article that grades below the standard in quality, and therefore has to be sold at a reduced price.

Another difficulty, and a very serious one, is that the dairyman has no voice in fixing the value of his product. If he sells it, he simply inquires of the buyer what price he has fixed on it. If it is taken to the factory to be manufactured and sold, he has only to take the avails as reported. Now we do not wish to be understood as even intimating that the factoryman does not report the avails correctly, or charge any want of honesty or fairness on his part. He may have disposed of the butter and cheese manufactured by him at the very highest prices paid at the time he made the sale, and still the facts are that his own interest is in no way affected by the prices which he receives. His is a fixed interest and does not and can not prompt him to the exercise of that care in the investigation of the "supply and demand" which will give him an intelligent view of the market, so that he may sell or hold his product as shall best promote the interest of his patrons.

A comparative view of the prices of cheese during the past few weeks, will afford some insight on this subject. As all are acquainted with the market price of cheese here, we shall only quote prices realized in New York. The average prices paid for cheese October 28, was as follows: Utica, 12½c.; Little Falls, 12¾c.; Herkimer, 12½c. November 6—Utica and Little Falls, 12½c. November 13—Utica, 12⅞c.; Little Falls, 13¼c.; Herkimer, 13c. November 20—Little Falls, 13¼c.; Herkimer, 13½c.; Utica, 13c. November 27—Utica, 13⅛c,; Little Falls, 13¼c.; Herkimer, 13½c. The prices realized for butter is higher in Elgin than those reported at the dairy centers of New York, and there would seem to be no good reason why the cheese sold should not bring as much here as there.

Another difficulty to be overcome is found in the perishable nature of milk, necessitating the best facilities for cooling and curing. We simply notice this difficulty. The necessity of having additional facilities for this purpose will be felt when we examine the system of dairying as now conducted in Denmark.

The practical workings of the law of supply and demand was finely illustrated in Utica, November 13. The demand was for cheese made in September, while the offerings were mostly of October make. One salesman, representing the Willow Grove factory at Trenton, had eight hundred boxes of September cheese, and availing himself of the advantages of his knowledge of the "stock on hand," refused to sell at less than fourteen cents per pound, at which price he closed the lot. This was three-fourths of a cent per pound above the extreme and one and one-eighth cents per pound above the average price paid at that time for cheese made in October. Nor has the demand for September cheese abated. The reports for November 27 say that cheese of September make would sell readily at fourteen cents per pound in the dairy markets of New York.

In selling it is frequently the height of wisdom to make haste slowly, and this is especially the case when the prices are so low as not to remunerate the producer.

How to overcome these difficulties; how to wring victory from apparent defeat, and so to advance the dairy interest of Illinois that it shall achieve the best results, is certainly worthy of careful consideration. That some other method of conducting the dairy business than that now pursued should be devised, is a felt necessity.

We have been much interested in the accounts we have seen of the value of what is termed "gilt edged" butter, which is the product of private dairies. Some time since one dairyman in Vermont inquired, through the columns of the *Country Gentleman*, why he could get but one dollar per pound for his butter while his neighbor got but one dollar and twenty-five cents for his, which was no better? During the present season we have seen an account of the "Philadelphia Gilt Edged Butter," which is put up in pound prints, wrapped in damp cloths, protected by ice, and sent to market and sold for one dollar per pound. All such butter is not only fine in flavor but is attractive in appearance, and the reputation of the maker gives assurance that it is uniformly of the highest grade. All of this class of butter is the product of private dairies. It could not be produced from milk that had been exposed to the heat of summer in taking to the factory, or had been mixed with milk from various dairies. This class of dairying will of course be confined to the few who can give their personal supervision to the business, and who have a special fancy for doing whatever they do in the very best possible way. To such it will afford great satisfaction and abundant remuneration. To the great number engaged in dairying a different system will be required.

We have been much interested in reading a sketch of an institution in Copenhagen, Denmark, established on what they term the "factory principle," by means of which Danish butter commands high prices in all quarters of the globe, and is sold in London in one pound tin cans at one shilling ten and a-half pence gold, or about fifty cents per pound currency, in quantities of not less than one hundred pounds.

It will be seen that this institution was established in 1863. Its chief business is to manufacture first-class butter and pack it in tins for exportation. It will be noticed that the system of heating the milk is such as to keep it in the most perfect state of preservation until all the butter and cheese is manufactured, and that the butter and cheese is of the most approved quality. The result as shown in the report is that the Danish dairymen get 62½ cents in gold, or about 30 cents currency for thirty pounds of milk, or at the rate of 2½ cents per pound. Read the account:

"In my report on Norway and Sweden, I gave figures and a description of a circular butter-making machine, which is occasionally seen on large dairy-farms in those countries, and is extensively used in Denmark. Machines of this kind are manufactured by Messrs. Caroc & Leth, of Aarhuus, and by Messrs. Hassel & Teudt, of Copenhagen. For farm purposes, machines having a diameter of from thirty inches to forty-five inches are most in request, and cost from £6 to £12 each, according to the size. They are capable of making from one to two hundred pounds of butter per day, each machine requiring the attention of only one dairymaid. For smaller occupations, a straight machine on the same principle, but of more simple construction (Steenstrup's patent), is manufactured by Messrs. Caroc & Leth, of Aarhuus, and by Messrs. S. H. Lundh & Co., of Christiana. It will 'make' about twenty pounds of butter daily, with very little labor on the part of the dairymaid, and its price is from 16s. to 30s. The process of 'making' consists in passing the butter under the grooved roller, thus expressing the buttermilk, which runs off along the grooves on each side of the machine.

"In the report of Mr. Rainals, dated May, 1860, it is stated that 'the butter, or the article sold in the market by the yeoman-farmers under that name, is execrably bad; it is strongly salted with the commonest salt, while in its preparation so little regard is paid to the proper extraction of the whey (*sic*), or even to cleanliness, that it appears strange that such produce can find sale.' All this has been changed, owing to the scientific exertions of Professor Segelcke, and the practical aid of Mr. Friis, of Lillerup. Professor Wilson has indicated in his report the efforts and the improvements made by these gentlemen in the *rationale* of butter-making, so I will content myself by giving a brief sketch of an institution established in Copenhagen on the factory principle, by means of which the best Danish butter commands high prices in all quarters of the globe, and is sold in London in one pound tins at 1s. 10½d. per pound, in quantities of not less than one hundred pounds. This institution is popularly known as the Scandinavian Preserved Butter Company, and trades under the style and title of Messrs. Busck, Jun., & Co. It was established in 1863, and has a subscribed capital of about £25,000. Its chief business is to manufacture first-class butter and pack it in tins for exportation. Most of this 'tinned' or 'preserved' butter comes to England for re-exportation to Brazil, India, and other tropical countries, for which purpose it fetches the high price just named. The premises, machinery, and organization of the company enable it to tin and turn out about ten tons of butter per diem, therefore it may be of interest to English dairy-farmers to learn the precise manner in which this result is arrived at.

"The company has contracts with a large number of dairy-farmers in Denmark and the south of Sweden; probably with not less than one hundred and fifty in the Danish monarchy alone, to the effect that they agree to deliver practically the whole of their butter to the company at stated times; the butter to be made and packed according to the regulations laid down by the said company. The chief features of the regulations are that the butter must be made from sweet cream, the whole of the buttermilk must not be expressed, and the butter must be packed in kegs properly prepared with a certain amount of salt upon the textile lining.

"Mr. Consul-General Westenholz has kindly favored me with the following note on this estalishment, and the process of butter-making, which it has recently prescribed:

"'Mr. Busck, Jr., who labors most indefatigably in what he has made his speciality, hired about three years ago from me, premises on a farm, 'Kaningaarden,' on my estate of Dronninggaard, twelve miles from Copenhagen, and bought the milk produced on my home farm by an average of one hundred and fifty milking cows, and established a school for teaching dairy-women, as well as for experiments with regard to obtaining the very finest produce.'

"According to the system to which Mr. Busck has come, which is now prescribed by the company for all first-class 'packing-butter,' the milk, set in small, deep, round cans, is placed in the tanks, which are then filled with ice (broken to pieces not much larger than walnuts) and cold water, the temperature of the milk being thus at once reduced to the lowest possible degree, say 40° to 45° Fahr. After twelve hours the milk is skimmed and the cream is immediately churned. When found inconvenient to churn twice a day, the cream, skimmed in the evening, is put in similar tin cans in ice and water, and thus kept till morning, then churned along with the morning cream. Cream from milk that has stood longer than twelve hours is on no consideration allowed to be used for first-class 'packing-butter.'

"This system, of course, cannot be carried out without ice, as no stream of water could reduce the temperature of the milk so speedily and so much as the ice, so as to bring all the cream to the top in the prescribed twelve hours.

"On this new system, 'ice, twelve hours' skimming, and sweet cream churning,' one may reckon on an average, thirty pounds of milk to yield one pound of first-class packing butter, the present value of which is 1s. 6⅜d., and say about 2¾ pounds of cheese, worth at least 1s., total 2s. 6⅜d.; while on the plan of skimming after twenty-four or thirty-six hours without ice, one can not calculate on more cream, while the value of the pound of butter is at present not above 1s. 4d., and the common skim milk cheese from the stale milk only 7d. to 8d., showing twenty per cent. in favor of the new system, which, of course, entails the expense of storing and preserving ice, but on the other hand in many respects saves labor, and gives a certainty of a uniform and superior quality, both of butter and cheese."

Now if it is true as reported in another paper on this subject, that the dairyman can keep one pig to each cow with the whey and buttermilk, and if the hogs when grown will bring ten dollars each above the cost of all other feed, and if such a system introduced into the dairy business of Illinois should prove as beneficial to its interests as it has been to the dairy interest of Denmark, it will be admitted that we have found the secret of advancing the dairy interest of Illinois.

You will have noticed that the business of the institution in Copenhagen is to buy all of the butter made by its patrons under certain prescribed rules, and to put it up in such a form as to give it the highest commercial value, and that the business is on so extensive a scale, and its product has been so uniformly good, that it has achieved a reputation in thirteen years that enables it to get the highest market price for its butter in the largest market of the world, and that this reputation accrues to the advantage of its patrons. It would be impossible for even the largest of its patrons to achieve such a reputation in a lifetime.

If some system not unlike this can be introduced into the dairy business of Illinois, and with results as beneficial as it has been in Denmark, our dairymen will not be under the necessity of practicing the most rigid economy with the hope that his savings may be distributed among his descendants of the third generation. He would have the pleasure of knowing that his own children would profit by his industry.

Judge WILCOX thought this an important subject. The plan of Mr. LORD was new to him, but it looked favorable; could not adopt it at once, but could make many improvements in our present system. Times are dull; all business is dull; we ought to have our cheese manufactured cheaper; two and a half cents per pound was too much; no factoryman has invested more than the value of a common farm. The dairyman is compelled to take his milk seven times a week; all the milk is sold; they raise no calves, no hogs; all they get from the farm is the milk: one quarter of the amount is paid for selling. It requires no more help to run a factory than a farm; the factoryman has no risk; the farmer is the man who is compelled to take all the risk; it does not seem fair. Where milk is made up by the pound, the factoryman has no real interest in the quality of the product; he gets just as much for a poor article as a good one; he merely is anxious as to the quantity. The Condensing company are particular in all respects; they take only good milk, and make only a good product. We can not educate people to eat poor food; we must change our mode of dairying, or some of us, at least, must go out of the business. It would seem to him that the best plan is, for every farmer who can, to make up his milk at home. One-fourth now goes to pay the factoryman, besides the wear and tear; they could save this fourth, and in the long run make more money, and much easier. Could see no way out unless we had a change, as prices were constantly on the decrease. We were now ruining our dairies by killing all our calves; by the home method we could raise our calves; the average dairy is not as good as it was five or six years ago; we should raise the calves from our best cows, and thus keep our standard up. The cows brought here for sale are all poor milkers—are not from milking families; we are constantly cheated.

Dr. R. R. STONE thought Judge WILCOX and Mr LORD a little severe on the factorymen; did not agree with them. The assertion that one factory could earn as much per annum as four or five farms was entirely imaginary; cheese factories all over the country could be bought for fifty cents on the dollar; why don't they invest, if it is such good property? The price of good butter in Elgin to-day is thirty-eight cents —higher than any other city reported; what has caused it? it is the factory system. The patrons of factories are all satisfied; all get their pay monthly. The idea that factorymen are oppressing the dairymen is all wrong; it is false; these statements are not true. It is the factory system alone and only which has made a permanent reputation for our product. Before the days of factories one wagon-load would glut the Elgin market; now train-loads find a ready market. The factory butter is A No. 1; it is tested on the Board of Trade, and is sold strictly upon its merits. Nearly all private dairies have stopped, and are taking their milk to the factories; they would not do so if it was not better. Skimmed cheese, seven years ago, sold for four cents; it now sells for *one cent* less than full cream. Factories get thirty-eight cents for butter, while the farmers can scarcely get twenty-five to thirty cents; which is the best? the farmer gets more by the factory system. The farmers have a committee of their own making to sell the cheese; there is no chance to cheat the farmer, even if anyone was so disposed.

Judge WILCOX thought Dr. STONE was wrong as to the patrons of cheese factories being satisfied; they did complain, and they had reason to; many complained to him, and said they must go out of the business unless a change was made. Although he did not sell milk to a cheese factory, he was directly interested; it all had its effect upon him in the general market.

Dr. STONE had no fault to find with fair statements, but could not indorse wholesale censure of factorymen.

C. C. BUELL wanted information as to warm and cold milk; what would be the results of setting at 40°? the longer it stands the plainer the line is seen. His plan of skimming was by the use of a dipper; would like information as to skimming when sour and when sweet, and the keeping qualities of butter from each.

G. P. LORD was willing to have anything stricken from his paper which reflected upon factorymen. He thought the Denmark plan the best one for our country.

On motion, adjourned to meet at 9 a. m. to-morrow.

THURSDAY, 9 A. M.

Convention called to order as per adjournment.

Topic No. 11. "What are the essential requirements of a good dairy farm?"

As the convention was drawing to a close it was agreed to discuss this question; and owing to the death of R. W. STEWART and the absence of C. C. BUELL, to whom was allotted this question, M. H. THOMPSON was called for, who said it was a mistake that his name appeared among the speakers upon this topic. The essentials of a good dairy farm were so numerous it was difficult to tell which were the most essential. First, you should have the farm, without slough, mountain, foul stuff, or mortgage. Second, good, commodious buildings, roomy, airy, and free from the thousand and one scents which linger around too many dairy barns. Plenty of good living water, furnished either by spring or wind-mill. The buildings should not be moved to the spring at some remote corner, but the water should be put exactly where it is the most convenient, summer and winter; often much time is wasted transporting milk and stock to water. Pastures should be so arranged that cows may step from the barnyard immediately into the pasture, if possible; driving cows a long distance to and from pasture in warm weather is certainly injurious, and it is always tempting to a boy or dog to be in too much of a hurry for the good of the poor, overheated and over-stuffed cow. Pastures should be composed of as many varieties of land and soil as can well be secured; this is equivalent to many kinds of seeds on the same land, for when one portion is parched by drought another may be green and fresh. If water can be put in various parts of the pasture during the summer months cows will drink oftener, and not overdo the matter as is often the case where the only opportunity is afforded in the yard. Shade trees are among the essentials of any dairy farm—a luxury which any herd will avail themselves of during the heated season. In short, everything is an essential which tends to the comfort of the cow and at the same time reports to the dairyman's pocket. It is essential that the dairyman really have a liking for his business; there is no romance about the cow stable or barnyard, the only attraction is love for stock or filthy lucre. The dairy should be made to pay or the dairyman should quit the business. It is often the case with prosperous dairymen that the cows have a more comfortable abode than the dairyman's family, if he is careless and heedless as to the comforts of his home; this is all wrong. The home of a thriving dairyman should be a comfortable and (if he is able) a beautiful one. It is essential that this should be so, because as the sons and daughters grow up, unless they find comforts at home they will never become dairymen or dairymen's wives. Many dairymen believe that when cows are kept nothing else can be raised on the farm—no garden, no flowers, no ornamental trees, nothing but milk. This is a mistake. The dairyman should have as fine a garden as anyone; he should take time to cultivate all the vegetables in their season, for if anyone deserves a good comfortable living in this world it is the poor, much abused milkman.

Dr. Woodward did not want too much wet or low land; preferred rolling lands for dairy use. Kentucky blue grass was best adapted for a good dairy farm; it would run out all other grasses. Pure water was among the essentials; to be furnished by a well was as good as to have a running stream; watered from a tank; in hot weather cows would resort to stagnant pools if no other was at hand; his wind-mill was the best investment on his farm; had used it seven years.

E. H. Seward said the first thing to be looked at was its location. Buildings should be located as near the center of farm as possible, so as to save cartage; should embrace both high and low land; pastures should contain both. Water was very essential, but not running water; artificial means completely controlled the water question; running streams spoiled sufficient land to buy many mills.

Thos. Bishop thought good pastures were among the essentials of a dairy farm; new were better than old; preferred rolling land, not too wet or too dry; upland stood more drought.

Geo. E. Brown, importer of Holstein cattle, was now called upon to give his experience as to dairy stock, under Topic No. 5.

He said there were many good breeds for the dairy; no one breed possessed all the merits requisite for a good dairy. Perhaps no breed possessed so many good qualities as the Holstein; they were large cattle, of kind disposition, and well adapted to our climate. They were probably the purest bred cattle in the world. They were bred without forcing; were fed on grass wholly during the grass season in their native country; very little grain is fed, even in winter; in some instances fed oil cake; two quarts, or pounds, was a good feed per head. In Holland, bulls for service are selected by a committee. They are a first-class butter cow; the butter is good flavor and firm; does not raise cream as quick as Jersey milk. The milk possessed wonderful keeping qualities; the skimmed milk was as good as some cows' before skimming; nineteen pounds of milk had made one pound of butter. The breed originated in the duchy of Holstein, at a very early date.

E. H. Seward thought they were nearly akin to the Durhams as well as Ayrshires.

Mr. Brown thought the Durhams took some of their good qualities from the Holsteins. They became famous as milkers over five hundred years ago; people go from all parts of the world to Holland for them. All breeds have good points, but he believed this breed to be better adapted for the West than any other, the beef and milking qualities considered.

Prof. **HALL** asked as to time of raising cream.

Mr. **MITCHELL** asked the difference between the Holstein and Belted cattle.

GEO. E. BROWN said "Belted" was not the proper name. They are well known in Holland under the name of Lakenfelders; are a separate and distinct breed from Holsteins, and are bred mostly in south Holland and Belgium.

S. W. KINGSLEY spoke in favor of Holsteins for the dairy; believed them the best, all things considered.

Topic No. 12. "What is the best and most economical mode of handling milk to make butter from small dairies, of from five to twenty-five cows?"

Prof. **HALL** came to learn all about this question; hoped it would not pass without discussion, it was an important subject.

I. H. WANZER was called for; said his experience was with large, and not with small dairies.

Dr. **WOODWARD** said he would advise every farmer to build a creamery on his own place; he would then be more independent. It was difficult to get a good place to build a good creamery; it must be separate and alone from other buildings, with no vegetable matter in or near. His was 12x34 feet, one room 10x12, one 12x13, with refrigerator and ice house; cellar 12x24, walls eight feet high, ceiled over head; walls and roof filled with tan-bark; water was received from well by windmill. Sets his milk in pans of seventy or eighty gallons, with water flowing around; milk is carried to creamery as soon as milked, and cooled at once; cream is held thirty-six hours in hot weather; could make as good butter in hot weather as in cold. The home plan is the most independent way. When taken to a factory, no matter how good one's product, or how carefully he handles it, he can never make a reputation for himself; he is swallowed up in the whole. It takes time to earn a reputation; once earned it is as good as capital invested; it is a "trade mark," and has its real value. Some milk could at all times be fed to calves and hogs with profit.

B. Cox asked Dr. W. what he received by his plan for his milk, per gallon.

Dr. WOOWARD could not at this time give the exact net price he had received; it was evident he had done better than those who took their milk to a common cheese factory. A dairyman with boys to bring up should by all means work up his milk.

S. W. KINGSLEY inquired as to how many cows one man could care for by his plan.

Dr. WOODWARD thought the labor was reduced at least one fourth.

Prof. HALL—How do you care for your milk in cold weather?

Dr. WOODWARD—Set my milk in pans two feet deep; hang them up in winter, and regulate the temperature in the usual way by artificial heat.

Dr. TEFFT—Why not let them remain same as in summer?

Dr. WOODWARD—Could not regulate the temperature as well.

R. R. STONE said Dr. WOODWARD'S was very similar to the factory plan. He regulated his temperature by steam; could not heat as evenly by stoves. Ice houses were now used by all factories. Last year in hot weather the dividends were small, but only for two months.

A vote of thanks was here tendered Mr. M. H. THOMPSON, secretary of the Association, for his labors and services in building up and maintaining the Association.

On motion of R. P. McGLINCY the executive committee were instructed to pay the secretary such compensation for his services as in their judgment would be just and adequate for the labor performed.

R. P. McGLINCY offered the following, which was unanimously adopted.

WHEREAS, The members of this Association learn with deep regret that Robt. W. Stewart, of Hebron, Ills., a member of this Association, is prevented from attending this Association—by reason of sickness; therefore be it

Resolved, That we heartily sympathize with him in his affliction, and assure him that we keenly miss him in our councils and regret that he is unable to be with us.

Resolved, That the President and Secretary be authorized to send a copy of the foregoing to Mr. Stewart, and that a copy of the same be spread upon the records and published with the transactions of the Association.

Mr. I. H. WANZER then read the following paper on the question (Topic No. 15), "Can the dairymen of Illinois profitably raise calves to supply the dairy?"

I. H. WANZER'S PAPER.

It has been my good fortune to be present at most of the dairy meetings since their first organization in the West, and never remember of a more important question coming up for their deliberation than this very calf question. It seems to me to be the very foundation of the whole business. Just in proportion as we neglect the breeding and raising of the best calves, just in that proportion our dairy stock must depreciate in value and our profits grow less, and just in proportion to the care in this direction, the value of our stock will increase and our profits grow large.

Within ten miles of where we are to-day, there are at least 250 dairies that will average thirty cows to the dairy, and I venture the assertion that it will average four cows to each dairy that don't pay the expense of keeping and care from one year's end to the other. Yes, and I will go further—I believe that it will average two cows to the dairy that fall so far behind paying expenses that it takes the net profits from two paying cows to foot their bills. I base these assertions upon experiments with my own dairy, which has been up to the average in point of profit. If this is true, we have 1,000 cows that don't pay the expense of keeping and care, and 500 that absorb the profits of 500 more. There are dairymen all around us that have kept cows from the time they have bought them, say at four years old, until their teeth have rotted out and the wrinkles have gone to the ends of their horns, and never have seen a twelve-month that they have paid expenses. From our present mode of supplying the dairy with cows it can't be otherwise than grow worse; we are sure to have a very inferior looking cow, and one very unprofitable. And it is a wonder to us that, with that foresight which characterizes the West, we haven't before stopped and asked the question, Does it pay to raise calves?

Before going into the particulars, I want to ask these dairymen if they don't know that they can raise a calf and keep it until two years old, and have a calf by her side, for thirty dollars? I believe you will say yes. Then I want to ask you if, after you have got that heifer raised (a calf from one of your best cows), if you would give her for such a cow as you have to go upon the street and pay forty-five dollars for? I believe you will say no. Then does it pay to raise calves?

Let it first be fixed in your minds that it costs no more to raise a good calf than it does a poor one. Good stock for the dairy seems to be within the reach of every dairyman. There are the Holsteins, which have been bred for centuries with the object in view of perfecting them in milking qualities. There are the Ayrshires, for which wonders are claimed; and there are the Jerseys, that, when crossed with our larger kinds of stock, make cows far above the average. The milking strain of Durhams we know to be good, and we have now calves from this stock that are richly worth raising, but instead we are sending them to the butcher. Good males from all the above breeds are within the reach of us all. And when we consider that it costs no more to keep a good bull than a poor one, what matter if we pay one, or even two hundred dollars? Suppose four or five dairymen join in the purchase of a first class male, and breed him to a part of each dairy—those, of course, that are the best milkers—raise the heifers and sell the males to others. Good milking stock is within the reach of every dairyman.

"But," says one, "I have no room, no time, for raising calves." Then I say keep fewer cows and better ones; make room for the calves. Then again, we hear them say "it costs too much; the milk that a calf would take in raising up fit to go on to grass would fetch more than the animal would be worth." Now in my plea for the calves I would say to those of you who take milk to cheese or butter factories, that it is easy to make arrangements, if done when you contract your milk, so that you may obtain either skimmed milk, buttermilk, or whey to raise the few calves you need to keep up your dairy. A calf need not have new milk; give him the extra keeping when he gets so as to eat oats or bran, which they will begin to eat at four weeks old. Calves can be successfully raised on sweet whey and oat meal, warming them both together. What the calf will lose in growth the first six months can be put on the next six months by grain and good care.

Whatever else eastern dairymen visiting us have failed to notice, they have not failed to remark that we had finer cows than they, but no finer than they used to have when they raised their own stock. As the country surrounding these dairy districts became exhausted and in course of time turned their attention to dairying, they were obliged to reach out farther, glad to purchase anything that was in the shape of a cow, until America should be ashamed of the class of cows that characterize eastern dairies. If we pursue the course we are now persuing it will be but few years before we, like them, will have inferior herds. We have already exhausted the country adjacent to us, and the cows we get are inferior in form and milking qualities, when compared with the cows we used to raise, or were able to get from our neighbors. Great praise is due to those who have introduced and are still introducing superior breeds of milking stock. Dairymen should show their appreciation by liberally patronizing them. Let us by all means stop in time, and commence the raising of our own cows, and thereby have them grow better instead of worse.

I tried the experiment, last season, of raising calves upon the skimmed milk from my creamery; and as the result of this experiment may interest some of you, I will give you a few figures kept in connection with the experiment, from which you may draw conclusions as to whether it pays to raise calves in connection with creamery or not.

Number of calves put in, 120, at $4.00 each	$ 480 00
Number of gallons of milk fed, 67,200, at 1½c per gallon	1,008 00
Oats fed, 840 bushels, at 30c	252 00
Cost of labor in feeding	255 00
Pasturage, stabling, etc	100 00
Total	$2,095 00
These calves sold at an average of $21.50 each, at an average of seven months old	2,580 00
Leaving a profit of	$485 00

This amount passed to the credit of the milk would bring it up to two cents per gallon, which is equal to six cents per pound for cheese, and this kind of cheese would not have brought three cents per pound at the season I fed it, for it will be remembered that this milk set thirty-six to forty-eight hours, and all the cream was taken out.

I am so much encouraged in this way of raising calves that I expect to stock up again the coming season. I have now fifty-five young calves and ten older ones. Many of my neighbors and patrons are bringing their best heifer calves to me, and marking them, expecting to bid them in at my sale next fall, I paying the market price for them when received.

I will conclude by expressing a hope that this discussion may beget a deep interest among dairymen in the securing of good milking stock and the raising of their calves.

The topic was further discussed by E. H. SEWARD, of Marengo, who said some persons thought that the quantity of milk given to a calf after the cream is taken off should be increased; this, in his opinion, was wrong; we should dilute the milk. First feed milk a little sour; the calf will not look quite so well as when sucking the cow; gradually increase the quantity. It does not cost as much to raise calves as people suppose; if they are pastured they soon begin to crop grass. He raised calves that weighed 600 pounds without feeding grain. We sustain a great loss in killing our calves. Would advise feeding grain; oil cake is also acceptable. If dairymen would raise more calves their dairies would be more easily kept up. No objection to feeding sweet milk, only that we do not get so much butter by so doing.

J. R. **McLean**, of Elgin, said the question is an old one, and has received no little attention from dairymen. He had favored the idea of raising calves for years; had raised calves on sweet whey, scalded; also used a little oats and meal; fed mush, or pudding, made of corn meal, putting in sweet milk; fed no bran until September. He got a Holstein calf and took it home, and in three weeks his cows increased a can of milk. [This was said in reply to a question as to what he thought of the Holstein stock.] He had a cow which he had raised that gave sixty-one and a quarter pounds of milk per day.

Thos. Bishop said he would let calves suck until nine days old, and then put them in the barn and feed them milk; his steers at two years old weighed 700. It required about ninety gallons of milk to raise a calf.

Dr. **Woodward**, of Marengo, thought one of the greatest leaks was in not having good cows, and thought it impossible to have good cows unless we raise good calves.

Dr. **Joseph Tefft** said that in raising calves in winter a dairyman would have to provide a different kind of feed from what he did in summer.

S. W. **Kingsley**, of Barrington, said he had been raising calves for years, and would continue to do so.

Topic No. 13. "To what extent may soiling be profitably substituted for pasturage?" was opened by J. R. **McLean**, who said this is the first year we have sown corn for cattle; feed from shock; am convinced that it is a good way; will try it again; feed Hungarian in October.

D. C. **Scofield**, Elgin, said we are left without data on which to base calculations. When we fail to have pasturage to keep up the flow of milk, then we need Hungarian and sweet and early corn; but if there were pasturage there would be little need of soiling.

Prof. F. H. **Hall** said he was feeling his way in regard to soiling; used rye sown in the fall, oats, and then corn fodder, which carries him through until fall feed comes; prefers sweet corn; the objection to it is its cost; sows rye from the middle to the last of September; could not say how far an acre of rye would go, but thought it would go a great way.

S. N. WRIGHT, of South Elgin, had soiled eighteen years ago; thought twenty cows could be kept on sixty acres by soiling; thought soiling could be carried on profitably. For exercising pasture would have about ten acres, and put about forty cows on it.

C. H. LARKIN, of Elgin, had been thinking of the matter, but had no experience in it.

J. R. McLEAN suggested that dairymen try soiling, and at the next meeting report the result; thought we should have to come to soiling sooner or later. In his opinion it was not the quantity, but the quality of the food that gives the milk.

W. W. CORBETT offered the following resolutions, which were adopted:

> WHEREAS, This is pre-eminently an agricultural country, all other interests resting upon this industry as a foundation; therefore,
>
> (1) *Resolved*, That agriculture, taken in its broadest sense, should receive such attention from the government of the United States as its magnitude and importance demand.
>
> (2) *Resolved*, That we urge upon Congress the justice and the wisdom of creating a position in the Cabinet upon an equal footing as to rights, privileges, etc., to be called the "Secretary of Agriculture." whereby the nterests of agriculturists may be fully represented and consulted, as well as the monied, war, naval and other interests less important than agriculture.
>
> (3) *Resolved*, That we suggest to the State and county agricultural societies, clubs, granges, and all other kindred organizations throughout the Union, that they petition Congress to this effect, to-wit: That the agricultural interests be represented in the United States Cabinet, from the ranks of actual and successful farmers.
>
> (4) *Resolved*, That the Secretary be instructed to forward a copy of these esolutions to the President of the United States Senate and the Speaker of he United States House of Representatives, with the request to lay them before the bodies over which they preside.

Topic No. 16. "*Resolved*, That the display of dairy products at the American Centennial has been of great benefit to the dairy interest at large," was discussed by C. H. Larkin, R. P. McGlincy, of the Elgin *Advocate*, Dr. S. M. Slade, and E. H. Seward, all of whom thought that not only was the display of dairy products at the Centennial beneficial to dairymen, but that these conventions were decidedly beneficial.

REPORT OF THE COMMITTEE ON DAIRY UTENSILS.

To the Illinois State Dairymen's Association.

Your committe appointed to examine dairy apparatus and utensils on exhibition submit the following report: McDermaid & Palmer, of Rockford, exhibit what they are pleased to call the "Boss" Churn. So far as we are able to form an opinion without the opportunity of a practical test, we report that we believe it to be as good a churn as any we have seen; experiment might perhaps enable us to make a still more favorable report.

Dr. R. R. Stone exhibits tubs and pails of Elgin manufacture to be used for packing butter. These seem to us to be a strictly first-class article, and we are confident that they will give satisfaction to such butter dairymen as may choose to use them.

Allison's patent butter tub is exhibited, which we regard as an ingenious and useful invention for closing the package without hammer or nails. We commend it to the favorable consideration of dairymen.

All of which is respectfully submitted.

Frank H. Hall,
S. M. Slade, } *Committee.*
D. C. Scofield.

S. W. Kingsley moved that the next meeting of the Association be held at Elgin.

Mr. Corbett moved to amend by striking out Elgin and inserting Sugar Grove.

The amendment was voted down and the original motion prevailed. The time for the next meeting was fixed for the second Tuesday in December, 1877, and to hold three days.

On motion of C. H. Larkin a vote of thanks was tendered the city of Elgin for the use of the court house.

On motion of Judge Wilcox a vote of thanks was tendered to the president, Dr. Tefft, for the very able and satisfactory manner in which he had presided over the convention.

On motion of D. C. Scofield the Association adjourned *sine die.*

PROCEEDINGS

OF THE

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION,

AT ITS

FOURTH ANNUAL MEETING

HELD AT THE

City of Elgin, Ill., December 11th, 12, and 13th, 1877.

AGRICULTURAL
EXPERIMENT STATION.
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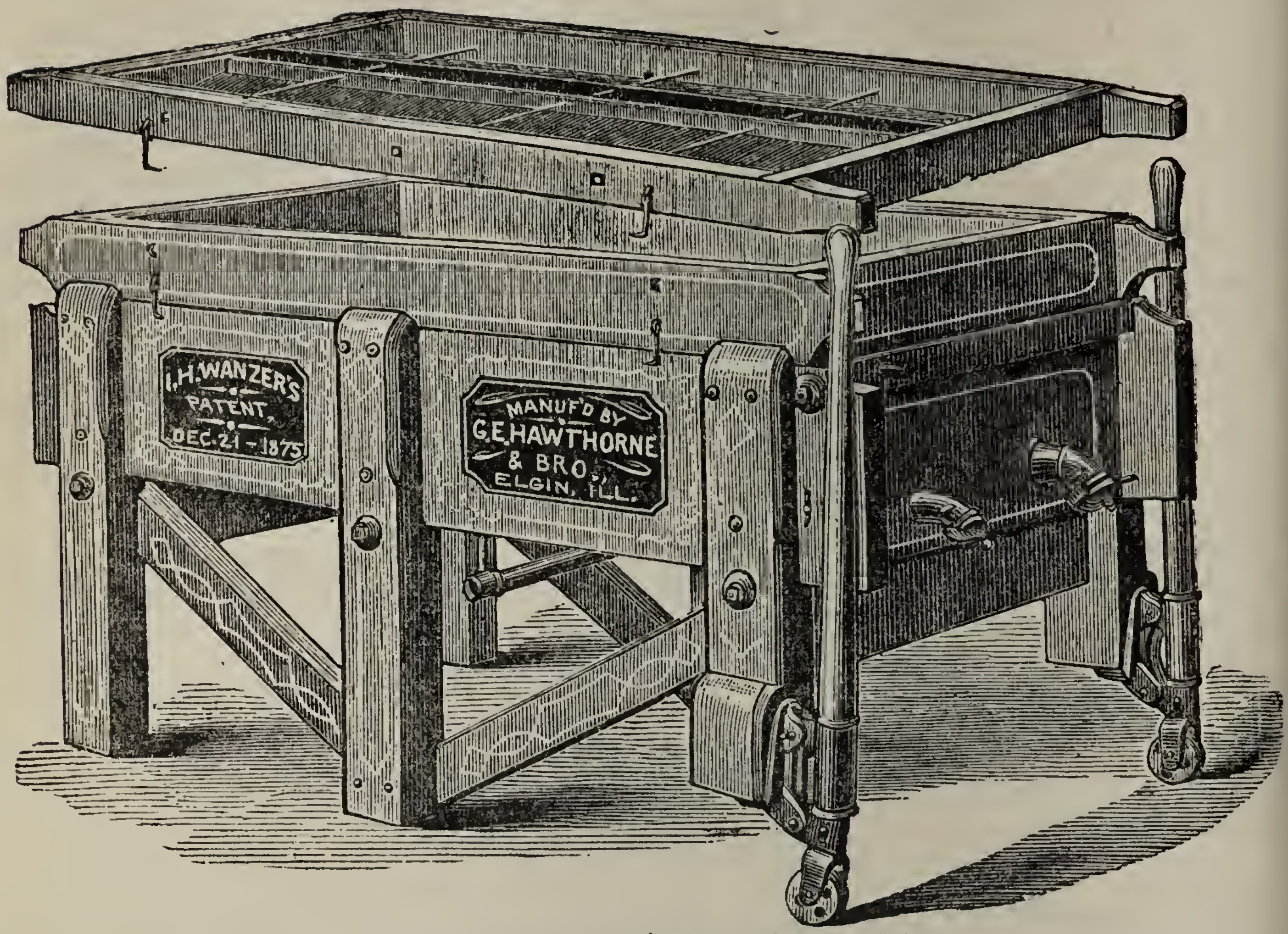

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FOR 1878.

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DR. J. TEFFT, ELGIN, ILL.

VICE PRESIDENTS,

G. P. LORD, ELGIN, ILL.
T. DAVIS, DAVIS JUNCTION, ILL.
HON. WM. PATTEN, SANDWICH, ILL.

SECRETARY,

M. H. THOMPSON, ELGIN, ILL.

TREASURER,

H. W. MEAD, HEBRON, ILL.

COUNTY TRUSTEES,

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J. R. MCLEAN,
C. H. LARKIN.

COOK COUNTY.
HON. JOHN WENTWORTH,
DR. KENNICOTT,
A. H. DALTON.

OGLE COUNTY.
J. DAVIS,
T. H. BAKER,
A. J. NEGERS.

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L. W. SHELDON,
R. M. PATRICK,
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DEKALB COUNTY.
HON. WILLIAM PATTEN,
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T. H. ST. JOHNS.

KNOX COUNTY.
A. J. MILLER,
GLEASON BREED,
C. J. FERRIS.

CLAY COUNTY.
GEN. L. B. PARSONS,
THOMAS MILSOM,
B. B. INGRAHAM.

DU PAGE COUNTY.
IRA ALBRO,
PETER PRATT,
A. S. BARNARD.

STEPHENSON COUNTY.
JOHN SMALLWOOD,
S. F. HENDERSON,
JOHN SWEZNA.

BOONE COUNTY.
L. W. LAWRENCE,
B. CORNWELL,
T. E. MUNN.

The fifth and next annual meeting of the Association will be held at the city of Elgin, Tuesday, Wednesday and Thursday, December 10, 11 and 12, 1878.

a.d.1849

MEMBERS

OF THE

Illinois State Dairymen's Association

FOR 1878.

Adams, Guy	Elgin,	Illinois.
Breed, Gleason	Galesburg,	"
Boies, Israel	Davis Junction,	"
Bishop, Thos	Elgin,	"
Beckley, L.	Nunda,	"
Barclay, D. F	Elgin,	"
Bartlett	Bartlett Station,	"
Chapman, H.	Sugar Grove,	"
Cox, Benj	Elgin,	"
Chapman, A. M.	Burlington,	"
Countryman, H.	Creston,	"
Davis, Jeremiah	Davis Junction,	"
Eldred, N	Gilman,	"
Ferris, C. J	Galesburg,	"
Gerler, H. B	DeKalb,	"
Gould, C. W	Elgin,	"
Gregory, L.		
Hall, F. H	Sugar Grove Industrial School,	"
Harley, H	Pecatonica,	"
Huntley, T. S	Huntley,	"
Judd, D. C	Sugar Grove,	"
Keating, John	Elgin,	"
Lovell, A	Sycamore,	"
Mead, H. W	Hebron,	"
Mead, H. C	McHenry,	"

Mann, S. S	Elgin,	Illinois.
McGlincy, R. P	Elgin,	"
Parsons, S. B	Flora, Clay County,	"
Perry, J	Chicago,	"
Pearson, J. W	Elgin,	"
Patterson, Jas	Kirkville,	Missouri.
Seward, E. H	Marengo,	Illinois.
Spitzer, W. A	Ontarioville,	"
St. John, T. A	Marengo,	"
Scofield, D. C	Elgin,	"
Tefft, Dr. J	Elgin,	"
Thompson, M. H	Elgin,	"
Todd, Hugh	Elgin,	"
Williams, S. K	Marengo,	"
Wright, E. W	Marteno,	"
Woodworth, J	Marengo,	"
Wilson, H.	Elgin,	"
Wattles, Homer	McHenry,	"
Wilcox, S.	Elgin,	"
Wright, F. W	Elgin,	"
Wheeler, S. M	Elgin,	"

Standard Quantity and Quality of Milk.

QUANTITY.—Borden's Standard—of eight and five-eighths pounds per gallon—is now taken and accepted as the standard for milk, not only in our own country, but in all Europe.

QUALITY.—The Executive Committee of the State Dairymen's Association, after many experiments carefully made, have decided that hereafter the following shall be considered by them as the standard quality of milk in Illinois: Water 87.5; Solids 12.5; in a scale of 100 parts.

ILLINOIS
STATE DAIRYMEN'S ASSOCIATION.

FOURTH ANNUAL MEETING

HELD AT ELGIN, ILL., DECEMBER 11th, 12th, AND 13th, 1877.

ELGIN, DEC. 11th, 1877,
10 O'CLOCK, A. M.

The fourth annual meeting of the above Association was held at the Court House, in the city of Elgin, pursuant to call, DR. J. TEFFT, president, in the chair.

After some preliminary business, the organization was perfected and an adjournment taken to 1 p. m.

TUESDAY, 1 P. M.

Convention met and called to order as per adjournment. Whereupon the president delivered the following address of welcome :

DR. TEFFT'S ADDRESS.

FELLOW CITIZENS, GENTLEMEN OF THE ILLINOIS DAIRYMEN'S ASSOCIATION:—Through the kindness of an overruling Providence we are permitted to meet here again in convention, after the lapse of a year spent in various pursuits most congenial to our feelings, and, at the same time, we trust, in full harmony with our social relations to our fellow man.

Before entering upon the business of this convention, you will please allow me, as an early dairyman of Illinois, and a citizen of this town or city for nearly half a century, to greet you, and extend to you, one and all, a hearty welcome to this hall, to this young city of ours, and to the hearts and homes of all well-wishers of this young, but rapidly growing, dairy interest in our vicinity.

It is with feelings far better understood than expressed that we again say we most cordially welcome you here amongst us, hoping and trusting, as we do, that your sojourn with us during the deliberations of this Association may prove most profitable to us all.

The agricultural profession (if we may deign so to call it), in our judgment, should stand at the head of all professions in a country like ours. It is the foundation rock; yes, the Azoic rock, on which are based all other professions, and without which all others would soon wither and fall to the ground. It is the fundamental basis of all prosperous towns and cities in this and all other civilized nations of the globe. Remove the agricultural interests from any community, kingdom or country, and they soon sink into utter insignificance.

Then placing this, as we do, as the corner-stone of all prosperous communities in the civilized world, we cannot see why it should not take a high position, and the agriculturist be so educated as to stand by the side of all other professions, if not head and shoulders above them.

The dairy, which is only a part of the great agricultural interests of this State, is fast growing in importance. But few years have elapsed since the establishment of the first Butter and Cheese Factory in this vicinity.

Look to-day at the great amount of dairy products manufactured in the northern portion of the State, almost vying with the other great agricultural interests of this portion of the same. Perhaps the southern portion of Illinois may not prove as remunerative in the production of butter and cheese as the more northern, but who knows this to be a fact?

But few years ago the country east of the Alleghanies was claimed to be the only dairy section of the United States. Some of the citizens inhabiting that section of our country politely informed us of the West that the West had outstripped the East in the production of the cereals, but that they had now embarked in the dairying business, and feared not the West as a rival in this branch of agriculture.

But how is it now? May we not say we fully believe that our fellow dairymen of the West have within the last few years been able to send forward very conclusive evidence that the West can and has made good butter and cheese, and may still continue to do the same?

Now, if this be true, it does not become us to pass upon any section of our country too hastily, especially so where we can obtain good water and the grasses.

The question is frequently propounded as to the first manufacture of butter and cheese—a question not very authentically answered at the present time. Nevertheless, in turning our mind's eye to the bible for a moment, we find in Deuteronomy mention made of butter of kine (meaning cow, undoubtedly); we also find that Samuel makes mention of butter and cheese of kine for David and the people to eat. Now, if the bibical history be correct, butter and cheese was made from milk of kine over 3,000 years ago, or about 1,000 years before that made by the Sytheans, the account of which is given us by the Greek historian, Herodotus, who lived and wrote about 450 years before Christ. The ancient translation of the Hebrew writers seem, however, to have thought that they found butter mentioned in scripture, but those best acquainted with the bible unanimously agree that the word (*Chamera*) means milk, or cream, or sour milk, and, at any rate, does not mean butter. Now, if this be correct, that butter and cheese was not known in early scriptural times, then the Sytheans will undoubtedly receive the credit of having made the first butter and cheese from milk, which, according to history, was made by them over 2,000 years ago.

In passing from ancient to modern times, you will please allow us to give you a few statistics pertaining to what is being done by the dairymen in our country. The estimated number of cows in the United States in 1876 was 11,085,400. The average price of same per head, twenty-eight dollars and eighty-nine cents; aggregating, in round numbers, to $320,256,206.

The amount of butter made in 1875 was 637,796,449 pounds, which being estimated at twenty cents per pound amounts to $127,559,489.80.

The number of pounds of cheese manufactured in 1875 being 266,698,638, which at ten cents per pound would amount to $26,669,863.80.

The consumption of butter in the United States is estimated at about fourteen pounds and that of cheese at nearly four pounds per head per annum in a population of about 45,000,000.

Of the foregoing products Illinois is credited with about one-fourteenth, she being the fourth State in the Union as per United States census of 1870, in the amount of dairy products produced.

The city of Chicago received in 1876, 35,384,184 pounds of butter and 23,280,000 pounds of cheese. Estimating the butter at twenty cents and the cheese at ten cents per pound, would make the trade of Chicago in this staple, amount to the snug little sum of $9,637,636.80.

The exportation from the United States for 1875 was 10,405,434 pounds of butter and 93,475,659 pounds of cheese. The exportation of cheese from Holland for same time was 60,000,000 pounds.

Denmark may be counted a strong competitor of ours; for the English market in 1873 she exported to England 42,526,484 pounds of butter, which is reported as having been sold in that market at fifty cents per pound, while for the same year the United States only exported 4,000,000 pounds, which was sold in that market at twenty-five to thirty-five cents, most of it bringing the former price. Sweeden also exported a large amount of butter which brought in the English market about thirty-five cents per pound.

Now, in reflecting upon what has been said in the foregoing statements, we are forced to the conclusion that either we do not make as good butter as our foreign neighbors or else our best butter does not reach the export trade. Let this be as it may, we are fully satisfied it should receive our careful attention as dairymen of Illinois.

No doubt a home market is the best when sufficiently active to take and consume the entire production of the country. At the present time ours is not such a market. Therefore, it becomes us, as producers, to look carefully to the export trade for the disposal of our surplus.

The dairy business is, annually, largely on the increase in this country. Butter and cheese is being made, and that too of good quality, in sections of our country where it had been supposed, in years bygone, to be impracticable to do anything of the kind. Some weeks ago we clipped from the *Prairie Farmer* (a paper published in Chicago, of much interest to the dairyman and farmer, if carefully read,) the following, which bears directly upon this point: "A colony of Swiss have settled on the Cumberland mountains, in Tennessee, who have dairies and cheese factories in successful operation; their products commanding ready sale and fancy prices."

Now, in conclusion, you will please allow me to say that we fully believe that every dairyman or farmer should consider it a duty that he owes to his sons, and daughters also, to educate them to understand the principles of labor as connected with human development and genuine happiness; at the same time giving them that book education which will fit them to make the best application of such labor, and also to prepare them to fill high and honorable positions in the social relations of life. We are fully aware that in times bygone when the farmer boy was taught to plant his tubers in a certain phase of the moon and his cereals in another, that book education was considered by some, perhaps many, as a dangerous thing for a farmer. Thank fortune, those days are rapidly passing, or have already, measureably, passed away. Schools have already been established in various sections of our country for the education of the young agriculturist or farmer and we trust they may be the means of doing much good.

Dr. J. Woodworth, of Marengo, responded as follows, in substance: Elgin people deserve great credit for their zeal and energy in bringing the dairy interests of the State so prominently before the world at large. He had not long been a professional dairyman. Left a professional life to engage in agriculture. Came to Elgin to learn, not to teach. For many years the dairy product had been brought to our market, where good, bad and indifferent, all brought the same price. Was glad to know that now all was changed, and each package sold upon its merits or not at all; and no one thing has had so much to do in bringing about this state of things as these conventions. Now, the prime brings good prices, the poor, poor prices, just as it ought to; believed it the duty of every dairyman to produce the very best he could, and thus keep the standard of our product up, so that when dealers wanted to purchase cheap products they must go to some other state. Illinois would not furnish them much longer. It is not profitable to produce a poor article, neither is it a satisfaction. Western products are now quoted as high, or even higher in the East than Eastern products, which is certainly an encouraging outlook; and if we permit that none but first-class goods shall go upon the market bearing an Illinois brand, we will soon lead the world in dairy products. We heartily coincide with the sentiment of the address of our worthy president, and shall join in the business of this convention feeling that our acts are important, and that we are not among strangers, and when we return to our several homes feel that our time has been profitably spent.

Prof. F. H. Hall, of the Sugar Grove Industrial School, now read the following paper. Subject, "The Successful Agriculturist and Dairyman."

F. H. HALL'S ADDRESS.

THE SUCCESSFUL DAIRYMAN.

"'Tis not in mortals to command success;
But we'll do more—we'll deserve it."

And deserving it, it will be ours. As sure as night follows the day, and the day follows night, so sure will success follow him who is worthy of it. There are apparent exceptions to this rule—there may be real exceptions, but they are as rare as four-leafed clover, or as thunder in January.

One of God's fundamental laws that applies to dairymen as well as to schoolmasters, is, that men have, in this life, just what success they are able and willing to pay for. The product obtained by multiplying labor by skill, determines the reward. It is true that the ability to labor or to exercise skill may depend, in part at least, upon the *pedigree* of the man.

There are thoroughbred men, as well as thoroughbred cattle. There are also grades and crosses among the human species.

There are men whose breeding especially fits them for the dirty work of the farm. They like the odor of horses, of cattle, and even of the barnyard. They seem never so happy as when ankle deep in rich hog-manure, they heap up the load that is soon to be transmuted into golden corn.

Then there are human beings whose breeding totally unfits them for the work of the farm. If they attempt to work in the garden even, among the verbenas and asters, they will put on their rubber gauntlets, and, holding their hands well away from their sides, will direct the hired man while he performs the labor. So particular are these cleanly-bred individuals that a fly in the cream unfits it for use and a hair in the butter is intolerable.

A cross between these two varieties of "humans" might produce a good dairyman.

But the science of stirpiculture is not yet so well defined that it will be safe to depend on this cross for our future supply. Neither is there a thoroughbred race sufficiently numerous to answer the purpose. So, for the present generation, at least, a judge, a doctor of medicine, or a good clean-handed farmer, with a wife that dares throw dirty milk into the swill-tub, or even a schoolmaster, may hope to take high rank as a dairyman.

But pedigree alone will not enable a short-horn to win in the show-ring. An abundance of wholesome food, judiciously given, is also necessary.

Hambeltonian blood alone, will not enable a horse to distinguish himself upon the course. There is necessary besides this the skillful training of a Higby or a Doble.

So too the well-bred dairyman needs feed and training. The former he may get from books, periodicals, at conventions, and by visiting other dairymen. The latter must be acquired by actual experience, aided by keen perceptives and a sound judgment.

I find myself to-day in better condition for the race, as a dairyman, than I was one year ago; because, since then I have been fed by a Wanzer, a Boies, a Woodworth, a Tefft, a Dake, a Stone, a Morrow, a Wilcox, a Buell, a Gurler, and a score of others. And they are all liberal feeders. I have found much food too, in the columns of the *Prairie Farmer*, the *Western Rural*, the *Live Stock Journal*, the *Country Gentleman*, and the *American Agriculturist*, as well as upon the pages of Arnold's American Dairying. Williard's Butter Book, and Warring's Elements of Agriculture. Some of this food I have been able to appropriate, to assimilate, and it has become a part of myself, so that to-day, having had in the months passed frequent exercise at the churn and at the butter worker, in the language of the horseman, I believe I can trot squarer and make better time than I could one year ago.

If the sound of my voice, by some telephonic power, could be made to reach those who never attend dairymen's meetings, I should dwell upon the benefits I received from the Elgin and Chicago conventions last winter. But this is unnecessary here. Let me then proceed, at once, to consider some of the essentials to financial success, a few of the details that need looking after, in order to ward off financial failure.

Failure costs *almost* as much effort as success.
Failure is *almost* as tall as success.
Failure is almost as *strong* as success.

The words of Macawber, somewhat changed, will answer our purpose: Income, $100 per month; expenses, $99.50; success. Income $100 per month; expenses, $100.50; failure. A single dollar added to expenses, income remaining the same, converts success into failure. A single dollar added to income, expenses remaining the same, converts failure into success. This then is the dollar that needs looking after, the dollar that persists in getting into the wrong scale; or the dollar that belongs in the income scale and *doesn't* get there; or the dollar that doesn't belong in the expense scale and *does* get there.

Come with me to the cow-barn. Is the urine, liquid gold, escaping through the floor and forming stagnant pools beneath the barn? There goes the dollar that might tip the beam in favor of success. Save the *liquid* and you may be able to *liquidate* your debts.

Or does the urine stand in pools upon the floor and accumulate, together with the solid manure upon the sides and udders of your cows? Be sure it will weigh heavily upon the failure side when it finds its way into the milk pail. The man who manures his milk instead of his land, does not deserve to succeed.

Do your cows drink ice-water in the winter, and with rainbow backs stand shivering in the cruel blasts of a fierce "northeaster?" They will burn the dollar that might convert failure into success, to keep themsevles warm.

Do you feed without racks, in a muddy barnyard? Then the dollar that might make you successful is daily tramped into the mud.

Do you feed your cows nothing but hay and straw in winter and keep them on a short pasture half the summer? Then you neglect to put a dollar into the expense scale that might put two or five into the income scale.

Do you feed your corn fodder in warm weather and bran while your cattle are upon the aftermath of a rich clover field? You will very likely conclude that it does not pay to cut up corn or to buy bran to feed cows.

Do you keep a huge bull-dog or a poorly trained shepherd that "brings the cows" at your bidding? And do the animals frequently come to the barn with high heads and bleeding heels? "Shoot the dog." For these cows are locomotive animals that get up steam by a combustion of butter material, and every unnecessary step, every motion beyond what is essential for the health of the animal, cuts off a portion from the butter yield, and from your income.

Does a frequent, vigorous, and improper use of the milking stool, or of the toe of your cowhide, or of the manure fork, or even of your fist, keep the cows in constant fear of you? By every excitement that causes the blood to flow faster in the veins of the cow, by every infliction of pain, and even by every cause of fear, the draft of the furnace is opened wider, and brighter glow the fires that are fed with butter.

Do you set your milk in small shallow pans? Then if you succeed financially you are doing so in spite of a large amount of useless labor.

Does the temperature of the milk in your dairy room, in the warm days of summer, often get as high as 70°? Then you are losing enough every year to supply yourself with better dairy appliances.

Do you warm your cream by guess in winter, and cool it by guess in summer? Do you guess at the amount of butter taken from the churn and guess at the amount of salt required? Then I guess that the quality of your butter product will not be sufficiently uniform to command the highest market price.

Do you make good butter and sell it at a grocery where the price paid depends quite as much upon the amount of groceries you are in the habit of purchasing, as upon the quality of your butter?

Do you trade with a man that handles butter only "to accommodate the farmer," and to draw trade, and who is quite well satisfied if the profit on *your butter* cancels the loss on your neighbor's grease—only provided he gets a good grocery trade from both of you? Then you do not exercise that skill in disposing of your product that is commensurate with the skill employed in your dairy room, or with that which the groceryman exercises.

If you habitually make poor butter, I can honestly recommend to you the corner grocery, as the very best place to dispose of it. But if your butter is first-class, and uniformly so, try the Elgin Board of Trade; or at least, find a man to deal with who has no goods that he expects to sell to you or to your neighbor, and he will probably be willing to buy the butter on its merits.

The grocerymen are often loud in their complaints concerning the quality of the butter brought to them by the average farmer. I have been repeatedly told by them that not one-fifth of the butter marketed is first-class.

But the majority of farmers will not stop making poor butter; this condition of things will continue in spite of Agricultural Schools and Dairymen's Conventions, in spite of the earnest and truthful statements so often appearing in the dairy column of our agricultural papers, in spite of all that may be said, and written, and invented by the Willards, the Arnolds, the Morrows, the Warrings, the Hardins, and the Cooleys, this condition of things will continue until the grocerymen shall be induced or forced to stop offering a premium for salvey, frowey, streaked, buttermilky butter.

If this Convention desires to promote the dairy interests of Illinois, if it desires to improve the quality of the butter manufactured in the numerous small dairies of this State, if it desires not simply the success of its individual members, but the enlightenment and consequent success of its brother farmers, who are at home, and whose forms never darken the door of an assembly like this, if it is ambitious that the reputation of western butter should be improved, let it make an earnest, a vigorous, and a direct attack upon the grocerymen and their method of dealing with butter makers.

I am confident that the average quality of Illinois butter might be improved twenty-five per cent. in a single year by such a concert of action among grocerymen as would render it impossible for a man to dispose of fifth-rate butter at a second rate price, and insure to the man who would make *first-rate* butter a *first-rate* price.

Butter that could be sold on the Elgin Board of Trade to-day for thirty-three cents, would not, in the Aurora market, bring over twenty-seven cents; while some of the butter that will be sold in Aurora to-day for twenty-five cents, could not be sold at all on the Board of Trade, or, if sold, would not bring more than seventeen or eighteen cents.

Now the man that makes the thirty-three cent butter loses six cents per pound on his butter, and the money is given as a premium to the man who makes eighteen cent butter. Then you will hear the grocerymen talk loud, in a general way, (they seldom mention names,) because the people do not learn to make good butter.

If you really make a first-class article and your grocery trade is large, perhaps you may succeed in getting one cent per pound above the grocery market price, but the offer will always be made in a whisper, and will be accompanied by the injunction to say nothing about it, as it would offend Mr. B., your neighbor, who did not receive the extra cent per pound for his butter.

I repeat and emphasize the statement, that grocerymen, as a rule, do not buy butter on its merits.

A lady of my acquaintance told me that she took butter into the Aurora market which she knew to be poor butter—very poor. It was made from bitter cream, and was similar in color to red chalk. Yet she received for it the highest grocery market price, and the buyer even told her that it was first-class butter.

An acquaintance of mine who had been buying butter, and upon whose hands quite an amount of poor butter had accumulated, disguised himself as a farmer, hired a pair of mules, and took part of it into the Aurora market, where, armed with a kerosene oil can and a sugar bucket, he offered it for sale. The ruse was a success. He received for it several cents per pound more than the butter would have brought had it been sold upon its merits. He bought a gallon of kerosene and ten dollars worth of sugar. Fearing to repeat the experiment upon the same ground, he hired a Swede to market the remainder of the accumulated stock, who did it with nearly equal success. If you make poor butter, then, take your kerosene oil can along, and ask the price of butter at the corner grocery.

But a change for the better can never be effected in this matter except by a concert of action on the part of grocerymen. No one dealer, however fully he may realize the importance of such action, can alone adopt the plan of buying butter on its merits, since it would inevitably result in diminishing his trade by more than one-half. But by unison of action, and the adoption of a system of inspection sanctioned by law, by which the grade of every tub of butter should be determined before it is offered for sale, and the employment of inspectors of known ability and integrity an untold amount of good might be done, and thousands of dollars added to the annual income of the dairymen of Illinois. The trade would then become educational, and hundreds of people would be taught what they do not now know, viz.: that they are not making, neither do they know how to make a good quality of butter.

Conventions like this would multiply, old cellars would be cleaned out, the cows would be given a good bed of straw, the churn would get an extra scalding, milk containing manure would be thrown to the pigs, the scales would be used in salting butter, proper dairy rooms would be built, and the amount of soap-grease put upon the market in butter tubs, would be reduced to a minimum. Until some system is adopted by the country and small city grocerymen, which will insure the recognition of quality in butter, the successful dairyman must seek some other market. Many good butter makers have already learned this, and others will not be slow in following their example.

One of the first requisites to a high degree and certainty of success, is a complete knowledge of one's own business affairs. It is not sufficient that we should know that our income during a certain year has been one thousand dollars more than our expenses. But that it may continue to be so, or improve, it is necessary that we should know the exact source of each dollar of income. The almost wonderful success of many of the dairy farms in and around Elgin, is not so much because they have had a good market for their milk. Almost any farmer in Illinois may realize nearly or quite as much per gallon for milk as those can who are within three miles of the Elgin Milk Condensing Company. The success of these dwellers in Elgin is not so much, I say, because they can get ten cents a gallon for their milk in summer, and thirteen cents in winter, as it is because circumstances have forced them to see the relation between feed and milk. They have thoroughly learned the fact of which many of the farmers in Illinois are at present ignorant, that the more a cow can be made to eat and digest, the more profitable does the animal become. They have learned what nineteen-twentieths of the farmers of Illinois do not believe, that to leave corn standing in the field until it is time to husk and crib it, is a wasteful practice. They have learned that the exposure of cows to storms, or even cold winds, affects the cash income unfavorably. They are fast learning that it is not profitable to turn all their calves to the butcher and depend for their supply of dairy stock upon second-class cows brought from other localities.

These things they have learned and are learning because the market for milk has induced them to turn all the resources of the farm toward the production of that one article, for which they receive their pay in cash. Thus, having but one article to market, the keeping of accurate accounts becomes a very simple matter, and they see, almost without effort, what method of feeding and managing dairy cows and farm crops, fills the purse the fastest. Not so with the man engaged in "mixed farming." It requires no little skill as an accountant on the part of such a farmer, to determine the *true source* of the different parts of his income. His cows, his hogs, his sheep, his poultry, his horses, his steers, are all fed from the same crib. (In too many cases, however, the poor cows get nothing from the crib.) The hogs are fed sour milk, which must be placed to the credit of the cows, and they eat the corn that escapes the digestive apparatus of the steers. Most of the income from the poultry is consumed upon the table, while the labor of both men and horses, all the minor expenses of the farm and of the household, are chargeable in different proportions to the various sources of income.

Thus the task of keeping debt and credit with each department of the farm, becomes one of considerable magnitude. Yet I am positive that the highest degree of success cannot be attained without doing this, and that for the time so consumed, if the work be well done, the farmer will, "in the long run," be richly compensated. As soon as one commences such work as this, he is led to observe more carefully; every bushel of corn, every ton of hay, every pound of oil meal, will, after its consumption, be brought to judgment, and will be required to give an account of its work. Comparisons will be made, correct values will be placed upon the various farm crops, and "guess-work" will, in many cases at least, give place to positive knowledge.

A very intelligent Irishman, whom I have had in my employ for some time, and whose judgment upon most matters is of real value to me, often insists that I keep my "growing pigs" too fat; that I "throw away corn" by so doing, etc. Very likely half the farmers in Kane County would agree with him; and yet, I cannot find one who holds to such opinions that ever *weighed or measured* to find the actual cost of a three hundred pound hog. They often make assertions with great positiveness, but they never support them with *figures.* Now, if a man has conveniences for weighing his animals, (and every farmer ought to have,) it will not take much time to know, *by figures*, whether or not the proper way to raise a hog is to starve him during the first half of his existence, in order that he may have a good appetite during the rest of his life; it will not take much time to know whether it pays better to market fat hogs, nine months old, and weighing two hundred and fifty pounds, or to keep them until they are eighteen months old and weigh five hundred pounds.

So important is this matter of keeping accounts, so necessary to a high degree of success to the farmer, that I will risk the tiring of your patience while I briefly outline a system, or rather part of a system, which it seems to me might and should be adopted by every intelligent farmer, unless he already has something better. On the first day of January, let him determine the several sources from which he expects income during the year. The more important of these should be selected, and a page of a common ledger devoted to each; write the name of the department at the top of the page. Perhaps, for the first year, the ledger might appear as follows: First page, "Milch Cows;" second page, "Fatting Steers;" third page, "Other Neat Stock;" fourth page, "Hogs;" fifth page, "Sheep;" sixth page, "Poultry."

Now he should carefully estimate the value of the stock in each department on January 1st, and enter its value upon the left side of the ledger page devoted to that particular source of income. Then, as often as he receives income from any one of these departments, during the year, let him enter it upon the right-hand side of the proper ledger page. And, as often as any department is the cause of an expenditure, he should enter the amount of the expense upon the left side. At the end of every month he should estimate carefully the food consumed by the animals of each department during the month, and place its value with the expenditures, on the left side. At the end of the year the valuation of stock in each department should be again taken and placed upon the right-hand side of the ledger page. Now the page or pages devoted to milch cows, will show something like the following results:

Upon the left-hand side will be the valuation at the beginning of the year, say....	$1,600
Also, items of expense, including animals bought, amount paid for medicine, salt, butter tubs, etc., etc.,	300
Food. as estimated at the end of each month	1,420
Total	$3,320
Upon the right-hand side will be the amounts received for butter sold	$1,850
Amount received for animals sold	100
Value of sour milk fed to pigs, as estimated monthly	400
Value of milk and butter consumed upon the table	75
Valuation of milch cows at the end of year	1,800
Total	$4,225

The difference of nine hundred and five dollars between the two sides, represents the income from that source.

Let the same be done with each department and at the close of the year the farmer will be able to tell, with some degree of accuracy, what line of farming pays him best and can govern himself accordingly.

I spoke of this as part of a system ; make it complete and you have the double-entry book-keeping of our merchants and bankers. Indeed, in part of the system that I have outlined, you will occasionally get a double entry ; as for instance, the value of the sour milk appears to the credit of the cows, and upon the debtor side of the hog account. And every expenditure of cash should appear upon the right side of the cash account, and upon the left side of some other account.

The *young* farmer should be satisfied with nothing short of a complete knowledge of double-entry book-keeping, and its application to farm accounts. Sets of books thus kept for a few years, would become invaluable to him. Upon their pages he would be able to discern scores of index fingers pointing the way to financial success.

But financial success is not all that is desirable or that the farmer may aspire. He who accumulates piles of gold may yet be poor, while he who has only a *competency* is usually much richer than he who is possessed of a *superfluity*. That dairyman or agriculturist whose success is as broad as it is long, whose desires are not *all* in the one direction of gold, gold, shining gold, who has learned to value money chiefly for its legitimate uses, will build up for himself and his family a home that will be a center of culture and refinement. Home adornment, home entertainment and amusement, the proper intellectual development of every member of the family will be provided for, and the sons and the daughters will be made to feel that farm life is not all "drudgery," and that the city does not contain all the attractions for maturing manhood and womanhood.

We must devote less time daily to manual labor, and require less of our sons and daughters. We must "manure our farms with brains," feed with brains, and put brains into the butter, and teach our children to do likewise. Let them know that there is just as broad a field for the play of the intellectual faculties upon the farm, and in the dairy room, as there is in the watch factory, or behind the counter. Make them feel that it is as noble and as honorable to be an intelligent and successful dairyman as to be a merchant or a lawyer. Then will this unfortunate tide that is always settling towards the town and from the country, be in some measure checked.

But I must not dwell longer upon this subject. The conclusion of the whole matter is this,

The successful dairyman is the man who by strict attention to the details of his business, and without excessive manual labor and drudgery, either on his own part or on the part of any member of his family, never swerving a hair's breadth from the right line of integrity, accumulates a competency; and while doing this, does not neglect that development of the mind, that intellectual culture, that heart culture, which alone can fit him and his family for the proper enjoyment of accumulated wealth, and make of them honorable and valuable members of society.

Topic No. 1—"If Dairy farming is the most remunerative, how can we make it more so?" was now taken up and discussed; G. P. Lord, Esq., of Elgin, reading the following paper:

MR. G. P. LORD'S PAPER.

Mr. President:—The topic for discussion is this: "If dairy farming is the most remunerative, how can we make it more so?" Or, in other words, what methods can be adopted by the dairymen of this country to make the dairy business more profitable than it now is.

That the importance of this subject may be fully impressed on our minds, consider for a moment the vast amount of capital invested in this branch of industry.

Mr. Sherman Tracey, in an address before the "Western Reserve Dairy Association," stated that in 1875 there was in this country 10,000,000 of cows used for dairy purposes, which, valued at forty-five dollars per head, represented a capital of $450,000,000.

If it requires three acres of land to furnish food for each cow, then we shall find that there are 30,000,000 of acres of land devoted to this purpose, which at thirty dollars per acre, a low estimate, represents a capital of $900,000,000 invested in land used in carrying on the dairy business. Nor do these two items include all that is invested in dairying, but we must add for teams, wagons, agricultural and dairy implements at least $100,000,000 more, making a grand total of $1,450,000,000 invested by the dairymen of this country in this single branch of industry.

Now let us compare this with the amount of capital invested in banking. We find that the comptroller of the currency reports that on the first of October, 1877, all the national banks of the country had a capital of $489,467,771. Banks other than national and savings, have a capital of $211,634,586.

By this it will be seen that the national banks of this country have a capital invested in their business exceeding only by about $30,000,000 the capital invested by dairymen in the single item of cows, and that the capital invested in banks in this country, other than savings, is but seventy-five per cent. of the amount invested by dairymen in land.

If now we add to the capital invested in banking the amount of individual deposits in all the banks of this country other than deposits in savings banks, we find as follows:

Individual Deposits in National Banks, October 1st, 1877	$ 616 403,987
Deposits in other Banks	483,458,242
Total deposits, (other than Savings' deposits,)	1,099,862,229

Add to this the

Bank Capital, (as before stated,)	691,101,357

And we have a total of

Bank capital and deposits, of	1,790,964,586

It will be noticed that this amount includes all the capital invested in banking and all the money of the commercial, manufacturing, and business men of our country.

If we adopt Mr. Tracey's statement of the number and value of cows, and our estimate of the quantity and value of land and other property used by the dairy farmers in the prosecution of their business, it will be seen that the capital invested in this business nearly if not quite equals all the banking capital and the money wealth of all the commercial, manufacturing and business men of this country.

How to obtain the best results for such an amount of capital so invested, is worthy of the most careful consideration.

In discussing the topic, how to make dairy farming more profitable than it now is, I shall present only one view of it, viz.: the necessity of making our dairy products of such kinds and qualities that they shall rank equal to that of other countries, in the best markets of the world, and thus avoid the fearful fluctuations in value so common to our own localities.

The Hon. X. A. Willard, in an address before the "Vermont Dairymen's Association," stated that in looking over the English market reports for the past ten years, it would appear that there has been but little fluctuations in price; that there never was a time when the market was glutted with cheese of clear, sweet, nutty flavor; that such cheese, of good keeping qualities, will always sell at good fair prices; that English Cheddar cheese, year after year, had been worth not far from ninety shillings sterling per cwt., while American cheese had varied from thirty to seventy shillings per cwt.; that on the eleventh of December, 1875, the market for cheese was as follows: English Cheddar, first quality, ninety shillings per cwt., equal to twenty-two and one-half cents per pound, currency; second quality, seventy-four shillings per cwt., equal to eighteen cents currency; English Cheddar, first quality, eighty-six shillings per cwt., equal to twenty-one cents currency; second quality, seventy-six shillings per cwt., equal to eighteen and one-half cents currency; third quality, seventy shillings per cwt., equal to seventeen cents currency; Scotch Cheddar, first quality, seventy-six shillings per cwt., equal to eighteen and one-half cents currency; second quality, fifty-four shillings per cwt., equal to fifteen and one-half cents currency; Dutch Gonda, first quality, sixty shillings per cwt., equal to fourteen and three-fourths cents currency; second quality, fifty-six shillings per cwt., equal to thirteen and three-fourths cents currency; Dutch Edam, first quality, sixty-eight shillings per cwt., equal to sixteen and one-fourth cents currency; second quality, fifty-six shillings per cwt., equal to thirteen and three-fourths cents currency; American, first quality, fifty-eight shillings per cwt., equal to fourteen cents currency; second quality, fifty shillings per cwt., equal to twelve cents currency; third quality, forty shillings per cwt., equal to nine and three fourths cents currency. And Mr. Willard remarks: "Such a difference in values proves either that our goods do not enter into competition, or that the quality is so inferior that our competition is practically no detriment to the foreign producers."

Mr. Livesey, of Derbyshire, England, who has made a specialty in keeping the run of the matter, says in a recent letter to Mr. Willard, that there has been scarcely any variation in the price of first-class cheese for many years in the markets of England. The variation has been confined exclusively to the American and inferior grades.

By reference to these figures it will be seen that first quality of American cheese in the London market in December, 1875, was eight and one-half cents per pound, currency, below the first quality of English Cheddar; seven cents per pound below first quality English Chistim; three cents per pound below the price of the third quality of English Chistim; one and one-half cents per pound below the lowest grade quoted of Scotch Cheddar, and only about on a par with the lowest grades of Dutch cheese in that market, while the third quality of American cheese was only worth about fifty-seven cents per cwt., or a little over one-half that of third quality of English Chistim. It seems to me that any candid man will say, in view of this state of things, that a reform in this matter is absolutely necessary.

And here it may be well to refer to the variation in the price of cheese in our own market during the present year. In the early part of the year, say from January 7th to March, cheese was worth in this market about thirteen cents per pound; on the 10th of July it was sold at seven cents; on the 30th of October cheese sold at twelve to twelve and one-fourth cents per pound.

This shows a reduction from early spring to July 10th,of almost forty-six per cent., and an advance from July 10th to October 30th, of about seventy-five per cent. What a strange contrast is this with the stability of the English market for their best quality of cheese.

I think there are but few men who would be willing to engage or long continue in a business subject to such fearful fluctuation in prices.

If now, we inquire into the reason for the difference in the price of the best English and American cheese in the London market, we shall find that it is not in the component parts of the cheese, for an analysis made of the best Cheddar cheese, six months old, showed thirty-four per cent. of water, a little more than thirty-three per cent of butter, and twenty-eight per cent. of casin, while the best American had twenty-seven per cent. of water, thirty-five and one-half per cent. of butter, and twenty-six per cent of casin. It will be seen that the percentages stated do not amount to the whole number of parts, but Mr. Willard, from whom I have the statement, says that American cheese has two and one-half per cent. more butter and seven per cent. of water less than the English Cheddar, thus indicating that the seven per cent. of mixture in the English Cheddar in excess of that in the American, is made to take the place of butter, producing a more palatable and desirable cheese, and one that will sell for more money in the English market than the American.

Mr. Willard further states that when he was in London, in 1866, that Prof. Voelcku showed him a cheese from Norway, which appeared to be exceedingly rich in butter; the casin was completely broken down, and was so mellow and plastic as to be easily spread with a knife, like butter. It was sweet and clear-flavored, and he was greatly surprised when informed that on analysis this cheese contained scarcely any butter in its composition.

From what has been said it will be seen that the difficulty does not lie in the component parts of the cheese, for Mr. Willard says if the Cheddar dairymen of Somertshire, by skimming the night's milk and adding to it the morning's milk, can make a cheese that will sell at from twenty to thirty shillings sterling per cwt. more than that from our best whole-milk factories, and if Holland can make a skimmed cheese that competes in price with our best whole-milk cheese on English market, then there is room for us to improve our goods.

Mr. Willard further says that it is almost impossible to convince cheese dealers and dairymen that a rich, mellow, palatable cheese, having the taste and appearance of much fat in its composition, can be made from milk not particularly rich in butter, though this has been proved over and over again.

Mr. Willard says the defect complained of in American Factory Cheese (when well made,) is its tendency to dryness; that there must be thirty to thirty-three per cent. of moisture in all cheese of desirable quality and flavor, or else an excess of fat to supply this deficiency of moisture. As moisture in the form of water is cheaper than butter, it is important to ascertain, if possible, how this moisture may be retained in the cheese. This is to be done in the process of curing.

Mr. Willard remarks, "One of the prominent faults in cheese making is a too rapid evaporation of moisture in the early stages of curing. The water does not have a chance to assimilate with the other parts before passing off, hence dryness and apparent lack of butter."

Uniformity of temperature and good ventilation in the curing room are necessary in order to achieve the best results in cheese making.

Mr. Harding, of Somertshire, told Mr. Willard that the success of Cheddar cheese was due quite as much to the curing as to the making, and that in their curing rooms great care has been taken to secure good ventilation and a uniform temperature of 70° to 75°.

In addition to this Mr. Willard insists that all factories should be provided with a refrigerator room, where the temperature should be 60° or below, and we think the temperature should be below 50°, and that when the cheese that is made in hot weather has sufficiently cured, it should be removed to the refrigerator room and then kept at so low a temperature that fermentation and all change should be prevented. It would then retain the flavor it had when it left the curing room, and as soon as the weather would permit might be sent to market without injury. This method adopted, ill-flavored cheese would disappear, the consumption of cheese would be increased, and all classes benefited.

Who, and how many of our manufacturers will adopt such methods in the manufacture of cheese as will secure to our dairy farms results equal to those realized by our English friends.

AGRICULTURAL
EXPERIMENT STATION.
JAN 1890
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S. K. Williams, E. H. Seward, and Israel Boies, also spoke to this question, all giving their testimony in favor of dairy farming, as it certainly furnished the necessary elements to keep up a farm. Manure was the great stimulant to any branch of agriculture, but none produced it to such an extent as the dairy. All of these gentlemen persisted that if you would take care of the cows they would take care of you.

J. R. Mc Lean also gave his evidence in favor of dairy farming. The grain farmer only received his return once a year, while the dairyman received his every thirty days; could pay debts or spend his money, as he liked. Urged all dairymen to hold fast to the good cows, but get rid of the scalawags. Do not sell a good cow because she goes dry a month or two. Must raise our own cows. This is the way to make our farms pay better. The better the cows the better the pay. To pay forty-five or sixty dollars for scalawag cows from Wisconsin or Missouri, was suicidal. Would never pay. Must raise our calves from our best cows, and then steer clear from cow jockeys.

Topic No. 2—" What are the essential requirements of a good dairy farm."

Dr. J. Woodworth, of Marengo, Illinois, said: The first of all was a good dairyman. He must be an honest man, a clean man, and a humane man. No slouch, or cruel man could ever become a successful dairyman, and they were not among the essentials. But good fences were, and good fences made good neighbors — or at least kept them so. It was easier and cheaper to have good fences than to consult lawyers as to liabilities, etc. Every dairyman and his stock should live on and within himself or move out of the neighborhood. Pure water and plenty of it was important. Cows will drink six or eight times a day if water is handy, in fact they will drink nearly every time they pass a tank of pure water. Believed that stagnant water would produce abortion. Sink-holes are not fit for cows to drink out of. Bad water is the cause of much of the dairymen's trouble ; if only he could be convinced of it. Would drain all the ponds as soon as possible. A good wind-mill was far better, than all the ponds or running streams; the water was purer and then you could have your water just where it was most convenient. Cattle were not compelled to search for holes in the ice in cold weather for a drink, and the weaker ones hooked about and bruised by the master ones. If on the prairie it is essential that you plant trees, so that when the mercury stands eighty or ninety, the cows can find shade. Plenty of shade should be furnished every dairy, so that hooking and crowding will not be necessary for all to be accommodated. If not near a factory, a good cool milk-house is absolutely essential, so that milk can be cooled as soon as milked. It is essential that all be clean; any farmer can run a dirty place, but a good dairyman will have nothing but cleanliness about him. It was essential to produce a good product as they will always command a good price Each dairyman should endeavor to build up a trade for himself, and should have his own trade-mark. It was a difficult task to enumerate all the essentials of a good dairy farm, but he considered anything which tended to make the farm richer and better, and to pay better dividends, were among the essentials.

E. H. **Seward**, Marengo. The first thing to consider was the location. It should not be remote from good markets. It should be compact in form, not "all long and no wide." Buildings should be centrally located and on high and dry ground. Americans locate buildings with reference to roads or streams ; foreigners do different ; they locate as to convenience. Wind-mills were far better than any creek or running stream. Our low lands must not be forced as pastures; cold, wet land is not fit for a pasture; it could be drained and thus improved. It is essential to have our barns of sufficient size to house all our hay as well as all our cows; it should be arranged with reference to convenience in handling fodder, and stock barns and farm houses should be as near each other as is consistent with health and cleanliness. Differed with many of his neighbors in regard to shade for cows; did not want any for his; it only tended to draw cows together in squads to fight flies—and each other—when they ought to be feeding; droppings would draw flies, and would also be lost as a fertilizer. Shade is not essential. Stagnant pools were to be avoided; cows would stand in them, and return to the stable in no condition to milk or handle. Our new lands were not adapted to plowing; must be reclaimed first. All our farms could be made good dairy farms if rightly handled.

JUDGE WILCOX said: First the land should be capable of producing good corn, oats, and grass; they are the main essentials. The farm should be as compact as possible. Should have the purest of water. Springs are preferable. Had two farms; one was supplied by spring, at no cost, not five dollars per year; the other was supplied by wind-mill, which was indispensable to that farm, as creek was remote from buildings. It was essential to have good water. Must not have all low land; varieties of soil was good, so as to allow cows a change; would not say much on this subject, as he would talk again to-morrow. Every dairyman should keep an account with his farm, to see how he was doing; expense was an important matter on a farm. The barns should be light, airy, and cleanly, and constructed in a durable manner for cattle; floors should be paved with stone; had one barn with paved floor which had been in use for twenty years; used cobble stones; the drops, or drains, should be flagged. Had one built in 1851; had not cost him twenty dollars for repairs since; floors would rot and sills decay, not so with paving; were less liable to odors or foul matter underneath them; in fact, floors are the principal cause of bad odors in our cow barns.

Where paving is used the urine is absorbed in the litter, and thus saved with the manure; had removed paving after many years standing and found the sand underneath perfectly clean and dry, as when put down. Under most floors in dairy barns was a complete cess-pool, and no amount of ventilation can remove the odors. Should have plenty of fresh air; barn should be high between joints, so air could freely circulate among stock. In one barn had sixteen windows; top sash he left out in warm weather; used wire screens to keep out flies in summer, and used blinds in winter. Ventilation is of great importance; when doors and windows are closed and the barn is full of cattle, the air soons becomes really foul. The convenience of the barn is also important; as well as the convenience of getting the milk to the cooler. A good board fence, eight or ten feet high, should protect the yard. The house is also of great importance on a dairy farm. It should front so as to get as much sun as possible, and receive a free circulation of air. Many dairymen do not build as to comfort; some build with the front north, which is wrong when it can be avoided. The rooms most used should be the pleasantest, and all should be arranged with a view to the convenience and comfort of the family.

On motion the chair now appointed the following Committee on Finance:

E. H. SEWARD, J. R. MC LEAN, AND C. H. LARKIN.

On motion, adjourned to meet at 7:30 p. m., to listen to an address from Prof. G. E Morrow, of the Illinois State Industrial University.

EVENING SESSION.

TUESDAY, 7:30 P. M.

Convention met pursuant to adjournment, when Prof. Morrow, delivered the following address. Subject, "The future of the western dairy interest."

G. E. MORROW'S PAPER.

"The outlook for western dairy interest."

If we look to the past of our western dairy interests as a means by which we may predict their future, we find some fluctuations, some reverses, but on the whole a marvelously rapid growth and remarkable prosperity. No other branch of American agriculture, engaging the attention of an equal number of men, with no greater capital, has been more prosperous than has the dairy since the close of the war of the rebellion—if indeed any has been equally prosperous. The introduction of the factory system of cheese making—the only case in which co-operation has been so directly and successfully applied in American agriculture—was followed by an extension of the dairy region, and increase of the quantity and improvement in the quality of our cheese product almost or quite unprecedented in the history of agriculture. A little less than ten years since, in this city of Elgin, I for the first time, attended a dairy convention. There was much interest; the business of dairying as a main feature of farming, had already reached considerable proportions, but compared with what it now is in the West, there had been but the very commencement.

If asked why dairying should have so generally proved profitable in those sections in East and West where it has been intelligently pursued, I should say: largely because it has compelled work—work daily and throughout the year; that it has made a fair degree of skill and intelligence absolutely necessary; that it has developed a fair knowledge of business principles; that it has been largely a cash business.

If we look to the present, we find some things not so favorable. The dairy interest, in common with all other business interests of the country, is somewhat depressed. The area in which it is pursued as a prominent feature has been vastly enlarged; the present demand for dairy products has been nearly, at times fully, supplied. The margin of profit on butter and cheese has often been small, and considerable quantities have been sold for less than cost of production. There has been less of complaint among western dairymen than among any other considerable class of western farmers, but there has, of late, been some talk of over-production, of unequal distribution of profits, etc.

Turning from the past and the present to the future, I can but believe that our dairy interests are not again to enjoy an equal prosperity with that of the most favored part of the past. It is to share in the changing conditions which have come and are coming to all American agriculture. We have been living in wonderfully favorable conditions—perhaps more so, in regard to accumulation of wealth, than any other great people ever enjoyed. To succeed at least reasonably well, to commence with little or nothing and, by middle or old age, to accumulate a fair competence, has been the rule rather than the exception with our farmers. The peasantry of other lands, with little training, little skill, little money, ignorant of our language, our modes of farming, even these have made success the rule and failure the exception. In other countries this has not been so. The hard times of which we now complain are not peculiar to farming nor to America. Other callings equally suffer, and many much more severely; other countries feel the financial depression even to a greater degree. The British farmer is in worse plight than is the American. With a denser population, with closer competition, the struggle for success will, to many, be changed to a struggle for life. Dairy profits will not be so large in the future as they have sometimes been in the past.

There is now no monopoly of territory in which dairying may be pursued under reasonably favorable natural conditions. The time was when only a narrow belt of country was believed fitted for the dairy, and this did not extend, at most, beyond Ohio. Common sense and enterprise proved that much of the Northwest was admirably adapted for successful dairying, and now we must admit that good butter and good cheese can be, have been, and are being produced much further South and West than we once thought possible. Some regions are better than others, but wherever good grass grows, good water can be found and there is a climate not injurious to man or cow, there no insurmountable obstacle to dairying exists.

There is now no monopoly of the knowledge requisite to commencing in dairying. Thanks, largely, to the published proceedings of such meetings as this, to agricultural papers, to dairy books, anyone can now learn much about how to succeed in dairying.

But the dairy interest is to prosper—prosper as well as most branches of agriculture, and better than many. The broad general rule will hold true here: that no needed calling, no needed producing interest can remain permanently depressed. Milk, butter, cheese, will continue to be used and in increasing quantities. The active and, I believe, the relative consumption must increase, and this demand will be supplied at a fair profit, in any series of years. Let us bear in mind that one of the chief reasons for its success in the past, is an element which will always tend to keep many farmers from engaging in the dairy business, They object to its confining nature, to being compelled to be at home night and morning seven days in every week.

The dairy interest, then, while not to have wonderful profits, is to prosper fairly, is to increase and spread over more of our country, but, except in the neighborhood of cities, supplying which with milk is to be an increasingly important part of the business, the tendency will be to make the dairy less an exclusive specialty, and more a leading feature of a somewhat diversified farming.

As a rule, I believe even western dairymen will find it directly profitable to do what I have for years advocated as desirable—raise their own cows rather than rely on purchasing to keep up their herds. They can do this as cheaply as others, and can, by so doing, secure better cows; can improve the average quality instead of tending to deteriorate it as has been the effect of the practice of relying on purchased stock. Many exceptional cases admitted, the western dairyman will find it advisable to look somewhat to the beef producing ability of his cows as well as to their milk producing qualities. The disposal of old or undesirable cows is to be an increasingly important question, and the time is coming when the bull calves on dairy farms will not be deaconed. Looking even to production of other crops for sale need not make the dairyman feel he is going astray.

While the foreign demand must long continue a most important feature in our cheese markets, and increase in importance as to butter, the suggestion I have often made to western dairymen, needs to be repeated: We should never lose sight of the home demand, never neglect an opportunity to develop it. Americans are butter eaters but not cheese eaters, as are the people of Europe. If we consumed cheese in equal quantities with the English, our present manufacture would barely supply the home demand. As a help to a larger home demand, I have urged the manufacture of a greater variety of styles of cheese. It seems peculiarly strange that with the inventive disposition of Americans, their proverbial independence and egotism, most manufactures should be aiming at the same general standard. It is not so in Europe. At a recent dairy show, one dealer exhibited over seventy varieties of cheese, differing widely in size, shape, color and taste. We have many tastes to gratify among our own people, and greater variety would much stimulate demand. Sometime, somebody will discover the mode of meeting the practical difficulties in producing a satisfactory small cheese, of such size that it can go into the retail trade for sale without cutting.

There has been a great improvement in the reputation of western dairy products—both butter and cheese, but there is still room for effort to increase the local reputation. These efforts should not be made in a too narrow spirit. If one can improve the general quality of all the cheese produced in his county, he is aiding his own prosperity, unless indeed he be relying on a special, limited local market. Reputations can be lost as well as made. A State lying east of us stands far lower as a cheese producer than she did a few years since. The cause is mainly, too much skimming. Another western State, as far west as Illinois, to-day holds a first rank for the quality of her cheese; in that State less skimming has been done than in any other of which I know.

The old question, whether the West could successfully compete with the East in dairy products, I count fully settled. Each section has its advantages, but the cheaper and more fertile lands, the abundant grass and low priced grains, the lower priced cows, and other advantages enjoyed by the West, fully counterbalance any superiority in other respects on the part of the East. There is room enough for both sections. and may be demand enough for all their dairy products.

After all, success in dairying, the future prosperity of the dairy interest, depends very largely on the character of the men engaged in it. In the new conditions we are meeting and must continue to meet, this will be increasingly true. The trained mind, the greater brain power, is to be a larger element of success than in the past. I believe there is a bright future for American agriculture and for this special interest among the rest, but trained, disciplined men will be needed. General and special education is to be more of a necessity for the farmer than it has been in the past. Not a mere training in manual labor, not a narrow education as to practice will be best, but such an education as will make the best man; understanding his business and knowing something besides this, that he may better understand it.

PROF. HALL did not expect to speak. The first dairy convention he ever attended was at Elgin. Came to learn how to handle butter. Kept his ears open to all the arguments. Treasured up what seemed consistent. Was introduced to Mr. Wanzer; went to his factory and learned many things; made a good article and got a good price for it; felt happy. Wanzer said, wash the butter. Boies said, must not use water ; and, he too got a good price for his butter. Also went to Dr. Woodworth's, and saw his mode. Would not take one hundred dollars for what he learned. Does us good after we get home. Tried experiments with deep setters; so also as to shade in pastures. Learned much from Prof. Morrow, but could not believe quite all he said; could not agree with all good men, but learned a little from all. Watched for the articles signed "G. E. M." in the agricultural papers, for he knew they were always good. Was a little sensitive as regards Jerseys; thought that to about evenly mix up Jerseys and Short-Horns, you would have the Holstein; they combine in a wonderful degree the beef and milk qualities; Jerseys better for butter, Short-Horns better for beef. If there was a cow that could produce seventy-five pounds more butter per year than his, he wanted her; seventy-five pounds for ten years was seven hundred and fifty pounds; at twenty cents per pound it amounted to one hundred and fifty dollars, which is more than the beef of any animal is worth. Had tested nine cows this summer; his friend had tested fifteen; it required a great deal of time and patience to churn nine seperate milkings and keep the product separate, each day; it took money to make these experiments. One makes eight ounces and the other twenty ounces per day; what is the difference between these cows; it costs as much to keep one as the other, while the twenty ounce cow is worth vastly more than the other. It does not seem right to mix the breeds; each should be bred for their own particular merit; perhaps the grades are as good as any for the dairy. As to hard times, it seems to me that the farmers are just above them. All taken into account, depreciation in all other property far exceeds that of the farm. Are not the farmer's profits as much now as ever? One pound of butter will buy five yards of calico. Are we not now making just as good profit as ever? The better plan is to get a better price for what we make. We must produce cheaper and thus make more profit; if we can produce it one cent less, it is better than to get one cent more for it.

PROF. MORROW thought PROF. HALL'S argument possessed a good many "ifs;" if she gave seventy-five pounds more, etc. It is not true that good cows of one breed will yield seventy-five pounds more than one of another breed. No one wants a horse who possesses all the good points. It is a good thing to breed for milk in a good size.

PROF. HALL said: Even if twenty-five pounds could be had from one cow more than another, it would very soon pay for the cow.

GENERAL PARSONS, of Clay County, said: We must go from home to learn of ourselves Last year his friends sent a committee to this convention to learn of the dairy business. When they returned home they called a meeting of the farmers, to hear the report of this committee; the meeting was of great interest; and now, this year he had come here to learn. Had supposed that all points pertaining to dairying had been finally settled, so that no two dairymen held two opinions as to the same plan, but found it altogether different; every dairyman had a mind and plan of his own. Was surprised to hear from PROF. MORROW that the future outlook for the dairy interest is unfavorable; we all know that all business is dull and unsatisfactory. In his county everything was unfavorable. Much of the land was under water early in the season; small grain could not be cut; they raised corn, corn, corn, every year, and their land grew poorer and poorer every year. He did not think the outlook for dairying was unfavorable; wherever he saw dairying he noticed good barns, fine houses, and good improvements, and the best farms—and were growing better every year. We export largely, and will in time export to all parts of the world. We ought to cultivate our home market; but our export trade is encouraging. In his location they raise corn, corn, until the soil is becoming ruined. No hay should be shipped to market; it should all be fed on the farm. It did not seem to him as though the business could fail. The Cotton States are constantly growing poorer every year, by their constantly raising one crop. Pork and grain all goes from the north; each year the planter is without money to go on; they grow poorer and poorer.

Wm. Patterson made some inquiries in regard to the essentials of a good dairy farm, as regards soil, etc.

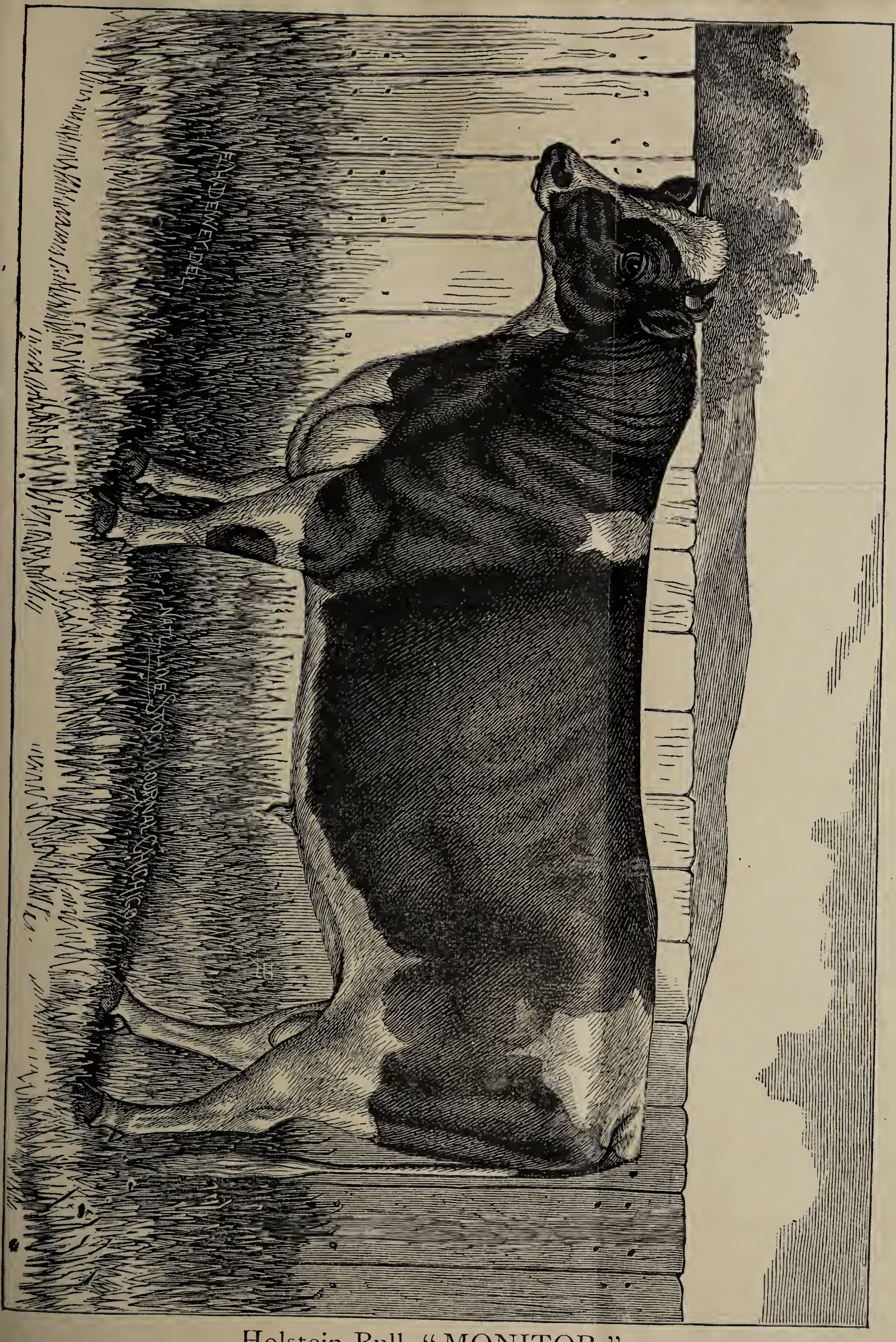
D. C. Scofield: As to good cows, his practice was to use as good a male as possible; then changed so as to get three-fourth blood. Wanted large sized bodies.

E. H. Seward thought dairymen should use great discretion as to breeding. Could tell by the looks of a calf what she would be when grown. Could not replace his cows by purchase; must raise his own calves.

D. C. Scofield wanted to know the milking points of a bull.

E. H. Seward: Must have slim head, milk mirror, etc.; must have all the marks of a heifer; must be from good milking stock.

On motion the convention now adjourned to meet to-morrow morning, at 9 a. m.


E. H. DEWEY DEL.
NAT'L LIVE STOCK JOURNAL CHICAGO

Holstein Bull, "MONITOR."

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WEDNESDAY, 9 A. M.

Convention met pursuant to adjournment, with largely increased attendance.

On motion, Topics Nos. 3 and 4 were consolidated; both covering nearly the same ground, that of "Fertilizers."

DR. S. M. SLADE was called for to open this discussion. He had not prepared any paper upon this subject. Said we should all understand chemical fertilizers better than we do. His experience had been limited, and mostly by observation. In Ontario County, N. Y., only twelve bushels of wheat could be raised per acre, while in Virginia, thirty miles from Washington, seventeen bushels could be raised, from land in use over one hundred years; even better than Genesee County. What did they use to get this yield? Simply about two hundred and fifty pounds of guano per acre; the land produced enough more to doubly pay for the guano. As to fruit-growing, he had only used the phosphates; none of them had ever paid, considering time and expense. The dairyman could handle coarse manure better than other farmers, as he kept more labor about him; with others, who do not keep so much help on the farm, perhaps concentrated fertilizers would be preferable, as much time is saved in applying, and get returns the first season. Believed chemical fertilizers, all considered, to be preferable.

DR. J. WOODWORTH: Came as a pupil to learn. Often one who knows the least talks the most; so he would be careful. His experience with chemicals had been mostly with salt. All land should be rotated. His principal fertilizer was common barn-yard manure, and should be composted and applied immediately in contact with the grain sown. Often planted corn on land used for corn the previous year. Would not plow; merely split the rows, putting in furrow a layer of compost manure; from this he derived the very best results. Planted his corn in drills; kept one man in field constantly, when planting, to apply the manure. Could plainly see marked difference where manure was applied; last year he put on eight loads per acre;, this year, six loads; thought this the best plan: to apply common manure. Land tilled in this manner, was mellow, easily worked, and free from weeds. Harrowed it over immediately after planting, so as to cover all the manure; he considered this plan better than twenty or thirty loads per acre as commonly applied, by spreading broadcast on top of the land. The muck, or sink-hole was valuable on the farm; it was a valuable fertilizer; made soils were good. Had better buy your flour than to raise wheat, as it only drew chinch bugs, with a poor prospect of a crop. Top dressing in Spring is good. Would not plow for oats, if done for nothing. Hoped others would speak upon this subject, as he considered it very important.

A member inquired as to the soil of DR. WOODWORTH'S land.

DR. WOODWORTH: As a whole, rather sandy.

PROF. HALL: Would not take much time; had had but little experience. We wanted facts, not guesses. As to chemical fertilizers, what was good for one farm would ruin another. We must find out by actual experiment just what we want, and try and supply it. All soils want either potash, nitrogen or phosphoric acid; must find out which we need; each one must find out for himself; each one should begin lightly, as we may make mistakes. Salt, put upon land, may unlock other properties, which otherwise would lie dormant. Lime is not often deficient, but like salt, may unlock other properties. MR. SLADE used eight hundred bushels of ashes with no good result, while upon his land he obtained the very best results from ashes. Ashes were rich in phosphoric acid and potash. It would scarcely pay to send to New York for fertilizers when we had so many at hand. Salt and barn-yard manure were both good; as was hen-manure His neighbor drew muck and mixed salt and lime; put it on twenty acres of land; got twenty-five bushels more corn per acre than when not used; this year the result was not as good as last year. To mix salt and lime with barn-yard manure, would be fatal to all as a fertilizer.

D. C. Scofield: Had had experience with ashes; paid five dollars for four thousand bushels; put on poor sandy soil and raised four tons of hay per acre from the land. If we apply unleached ashes we must know the soil. Barn-yard manure should not be allowed to leach in the yard, or much of its value would be lost; thought the best plan was to draw direct from barn to field when fresh, thus saving the liquid portion of the manure, which is the most valuable.

Thomas Bishop wanted to know where we should all go for ashes; he made about two barrowfulls per year, but it was out of the question for all farmers, as a rule, to get them; we must have something else.

Dr. Slade was of the same opinion; all could not get them; he considered them good, but they could not be had. Mr. Smith had used a large amount, but did not consider them worth drawing.

A. Smith said he had used five hundred or six hundred bushels with very poor results.

Prof. Morrow being called for, said: They were making experiments at Champaign with various kinds of fertilizers; hoped before long that they could give the exact results. We could not rely upon one test alone. We must find exactly from what the benefit comes. In making experiments, do not try upon too large a scale; begin small. It is hard to say we know; it takes a long time to prove or disprove many things. One person in England had experimented thirty-six times on wheat. We should measure and weigh accurately. In testing fertilizers, long strips of land are best, so as to get as much variety of soil and climate as possible. Manure means manual, or working; i. e., working the soils. All plants derive less of their sustenance from the soil than from the air. All that goes up must come down. Ten or twelve things makes up the plant; so with animals. Chemical manures are good; it is mostly furnished from air, water, etc. Ashes could not in this country be supplied in sufficiently large quantities to be practicable. Barn-yard manure must be the main stand-by for the western farmer; it contains all the properties which plant life demands or needs. It is true that it loses somewhat of ammonia, but to no serious extent. The soil goes on making itself; even poor soils if allowed to remain idle a few years; it will enrich itself so that it becomes new again.

John Keating was called for, but not having prepared a paper, would not speak.

Israel Boies had experimented with chemicals on a small lot formerly used as a nursery; used phosphates; put it on poor land in furrow, and planted top of it; also tried ten loads of barn-yard manure on same land; the phosphate produced corn one foot higher; could see effects of it on land for several years; was satisfied that all well rotted manure on grass land would yield double any other manure.

E. H. Seward had used many kinds of fertilizers; salt gave as good results with him as any.

Dr. Slade wanted to know the relative difference between fresh and well rotted manure; one was concentrated and the other not; how estimate it as to bulk, when applied to grass.

G. P. **Lord** had for years drawn out manure as fast as made, and got all the grass he could take care of; cut his stalks; they took up much of the liquid manure. Had used muck; put it on dry, sandy soil, with good effects.

Mr. Chapman, Sugar Grove, came to learn wisdom; was a small farmer; had experimented some with manures, which he considered of great importance; had no experience with chemicals. Barn-yard manure he considered the most important of all, and the most readily had and applied. Endorsed much which had been said. Preferred top dressing, done early in the season, the best; it should decompose in the field so that none will be lost. Cleaned his yards twice each year. As to clover as a fertilizer, he regarded it even of more importance than barn-yard manure; had kept his land up for many years by means of clover, plowing in when green; it was superior to any manure he had tried. Three successive crops on the same land was sufficient; land needs rest; should not be used constantly; must have rest same as an animal. Thought we all could learn much at these conventions; felt well paid for coming.

E. H. **Seward** wanted to know how he applied clover.

Mr. Chapman said the roots were good; he also often plowed under the second crop of clover.

Luther Bartlett asked if the condition the land was left in didn't have as much to do with it as the clover.

S. K. **Williams** wanted to know what was meant by resting soils.

Mr. Chapman said that to keep constantly plowing and taking a crop from the same land, and putting nothing back, it will soon become worthless; must have rest or fertilizers.

H. C. **Mead** did not think it best to plow manure in too deep; did not get any benefit the first season and might not the second. On an adjoining lot to his, a row of trees shaded two rows of corn, which were much smaller than the others; was it the shade or the effects of the roots of the trees. Said Morrow looked like a professor; could he tell?

Prof. Morrow had supposed he looked like other men; was sorry to find to the contrary. He knew many thought that agricultural editors knew but little about farming, and that professors knew less; it might be so. However, roots of trees had much to do with crops growing in close proximity. As to plowing in manure, it reminded him of the man who put his dinner in his hat, instead of eating it; it didn't seem to invigorate much; he did not think any fertilizer could be exhausted in one year.

E. G. **Ketchum** thought one load of barn-yard manure put on top, as good as two plowed in; especially on grass land; to plow in manure he considered as labor lost, as the soil would consume it as fast as applied; could see no results from it.

L. W. **Sheldon**, Union, Illinois, furnished the following paper on "Fertilizers."

L. W. SHELDON'S PAPER.

Mr. President and Gentlemen: I am an advocate of any kind of fertilizers that will induce plant growth. Chemical fertilizers can be very profitably used if properly applied, but the value of each can only be ascertained by careful experiments. The farmer with a cold, clay soil' cannot expect the same kind of fertilizer to do the same for his crops that a brother farmer realizes upon a warm, sandy soil. All fertilizers need a certain amount of moisture to fit them for plant food; some much more than others. All should be incorporated with the surface soil in early

Spring, in order to supply the need of the plant. I have found bone super phosphate valuable upon warm sandy soil, with three hundred pounds per acre. Common salt is superior to the above, with one barrel per acre; wood ashes and quick-lime are both valuable at the rate of eight bushels per acre. I have never known a chemical fertilizer to prove of any value when plowed under or buried beneath the reach of the plant.

A lamentation comes through the columns of the *Country Gentleman* of last week, from a farmer in Pennsylvania, who experimented with super phosphate by plowing it under six inches; he came to the conclusion that he had better bought his corn. Where I have experimented, the value of the crop has been increased from twenty to forty per cent., upon corn, oats, and grass land. From what I have seen of these fertilizers, I would not hesitate in recommending them on warm sandy soil, where commercial fertilizers are necessary. I believe super phosphate valuable upon most soils.

On motion the President appointed G. P. LORD, J. R. MCLEAN, and S. K. WILLIAMS, as a committee on resolutions of condolence in regard to death of members since our last meeting.

On motion, I. BOIES, F. H. HALL, and S. WILCOX, were made a committee on nomination of officers for the ensuing year.

JUDGE WILCOX here spoke of the bill which had been prepared and laid before our Legislature, with reference to the adulteration of milk; he said it had been allowed to sleep the sleep of negligence; our legislators could see no political significance in it, therefore paid no attention; it ought to be attended to; it was important to every dairyman and should be passed at our next legislature.

M. H. THOMPSON offered the following, which was adopted:

Moved that a committee of five be appointed, which shall be known as a Committee on Legislation, whose duty it shall be to lay facts and figures before the next session of our Legislature, and use their best endeavors to secure such legislation as they may deem proper and for the best interests of this Association.

The following were appointed such committee: G. P. Lord, Elgin; Gen. L. B. Parsons, Flora; Prof. F. H. Hall, Sugar Grove; C. J. Ferris, Galesburg; and H. W. Mead, Hebron.

On motion, S. Wilcox, F. H. Hall, and I. Boies, were made a Committee on Nominations.

On motion, L. Bartlett, J. R. Mc Lean, and Benj. Cox, were made a Committee on Ways and Means.

Prof. F. H. Hall moved that when we adjourn, it be to meet next year at Sugar Grove, when an amendment was offered that Elgin be substituted for Sugar Grove. After considerable friendly discussion was held, it was voted to let the whole matter lie on the table until 4 p. m., at which time it was made a special order of business. The convention now adjourned to meet at 1:30 p. m.

WEDNESDAY, 1:30 P. M.

Convention called to order, and while a large number of members were visiting the works of the Illinois Condensing Company, the following reports of officers were read, which were received and filed.

TREASURER'S REPORT.

To cash on hand at last report	$ 4 25
To cash received for membership, etc., 1876.	38.00
To cash on hand to balance	$42.25

H. W. MEAD, Treasurer.

SECRETARY'S REPORT.

To cash on hand at last report	$25.13	
To cash received of H. W. Mead, Treasurer	40.00	
To cash received from advertising	72.50	
To cash received for membership	11.00	
To cash received for sale of reports	1.25	
By cash paid S. L. Taylor, for printing		$100.00
By cash paid sundry other printing, etc		14.75
By cash paid engraving plates, etc.,		8.25
By cash paid for stationery, postage, expenses, etc		25.84
By cash on hand to balance		1.04
	$149.88	$149.88

M. H. THOMPSON, Secretary.

Topic No. 5—"How much per pound is a fair compensation for making butter, including salt, packages, etc., and how much additional for marketing."

THOMAS BISHOP said the price now paid seemed too high. He had no experience as a manufacturer; he knew this, that his neighbor, Mr. D. Johnson, began manufacturing a few years ago, poor; now he owns two or three factories and is a rich man, while all the farmers about him who have patronized the factories, are just where they were years ago. Expenses of making butter were not large; a little salt goes a long way in butter making. He believed the profits of two or three factories would buy a farm every year.

L. C. WARD, St. Charles, said he was not a speaker. As to making butter alone, he had no experience; as to making both, he had. To run a factory on three thousand pounds per day, would ruin anyone; twenty thousand pounds would do, at three and one-half and four cents for butter. He knew that some factories in the East worked up milk into cheese for one and one-half cents per pound, while two and one-half was charged. He had been to some trouble to get reports from some of those Eastern factories. In Chataqua County, N. Y., while they were paying a dividend of ninety cents per one hundred pounds of milk. he was paying, the same time, one hundred and five cents per one hundred pounds of milk, he charging two and one-half cents for manufacturing, which was the cheapest for the dairyman; it was an easy problem to figure; he paid fifteen cents per one hundred pounds more than they did; they could afford to manufacture cheaper than he could; they often used old sheds (or something no better,) for factories; no capital invested, while he had fifteen thousand dollars invested in his factory which was perishable property. Products would sell better out of a nice, clean, well-regulated factory, than an old rickety shed. In the East, factorymen employed women at one dollar per day; he hired good, experienced help; had to pay over three dollars per day; this must be done where a factoryman warrants his products; no cheap help will do where a good article is desired; you must hire a good man with a good head on him. Could work up fifty thousand pounds as well as five thousand pounds per day. It was worth a great deal to patrons to have their product sold, and always at the highest price; sold all to one man. It was not a fact that the majority of patrons to cheese factories were dissatisfied; could always hold his patrons; they were constantly on the increase. The fact is, the western farmers charge a little more than in the East, but pay their patrons a great deal more. Small factories should be consolidated, so as to cheapen manufacture. Must have good factory buildings;

sheds will not do: i. e., for western people. Factorymen should guarantee their product, prime, and then should charge a fair price, and no more. As long as patrons were satisfied, he thought others ought to be.

ISRAEL BOIES: Could not add much to what had been said. The amount handled had much to do with what ought to be paid for manufacturing. He paid sixty dollars per month for a man in his factory, and give his own time —as the "old man" wasn't "good for much anyway;" he kept none but good help. It cost but little more to handle eight thousand pounds than two thousand pounds. He makes exclusively, butter; of course, where both are made the profit is more. He agreed fully with Mr. Ward; thought his argument unanswerable, if facts are used.

S. K. WILLIAMS: Was part owner of a factory; run five thousand pounds per day, and after all expenses were paid, he knew the stockholders received thirty per cent. on their stock; how it was done he could not tell, only he knew he received that magnificent dividend.

THOS. ST JOHN: Was surprised to hear any factoryman say that butter could not be made for less than five cents per pound. He fully corroborated MR. WILLIAMS' statement as to the thirty per cent. dividend. He made for four cents, and had charge of the above factory referred to. Factory cost two thousand dollars; was just as good for what it was made for as a fifteen thousand dollar factory; did not think such a factory could be run to advantage, and that a large amount of useless capital was tied up for farmers to pay interest on.

JUDGE WILCOX said he had written to MR. WILLARD to ascertain what prices were paid in the East; had also made figures for himself, which were as follows: Take for example a dairy of fifty cows; say an average yield is one and eight-tenths gallons per day; in one year the fifty cows would give thirty-two thousand five hundred and eighty gallons. Now allowing two and one-half gallons of milk to make one pound of butter, we have thirteen thousand one hundred and forty pounds, for making which the farmers pay five cents per pound, amounting to six hundred and fifty-seven dollars; the milk must be delivered three hundred and sixty five times each year; to allow two and one-half hours each trip would be fair, which would make nine hundred and twelve hours, or about ninety-one working days, which for man and team is low at three dollars per day, amounting to two hundred and seventy-three dollars, which added to the six hundred and fifty-seven dollars for making, amounts to the handsome sum of nine hundred and thirty dollars, which one farmer of fifty cows is compelled to pay to have his milked worked up. Now take ten dairies, and we have the sum nine thousand three hundred dollars, or about the price of a good farm each year; should twenty dairies patronize one factory, we see at a glance eighteen thousand six hundred dollars would be received. I do not know just what share of this is profit, but I do know that it is far more than dairymen can afford to pay. There is no doubt in my mind but what the price now paid to factorymen is exorbitant, and should not be allowed or paid. The factorymen are really getting the cream off all our farms, and leave us only the skim milk; but it is all right if we agree to pay it; but we should not agree to. It is a neat, clean thing; no risk; he has his, anyway; the dairyman comes in second, every time; he can't lose; the money is in his own hands. Of course fancy men cost fancy prices, but they were unnecessary; it only adds to the cost of manufacture. In the East, milk can be made up one and one-quarter cent per pound for cheese, and three cents for butter, and why not here? But these prices do not include marketing and insurance. Of course large factories, receiving large amounts, can handle with less expense. The fact is, everything else has gone down, and the price of making butter and cheese ought to go down too. No business was so sure; no risk; with but little capital invested.

L. C. WARD said that from the letter of Willard's it appeared that five cents and two cents were charged east. Now if you need a lawyer do you employ a good one or a shyster because he is cheap. He found it paid best to employ first-class men in all professions. One Eastern factory run upon the cheap plan paid twenty-two cents per hundred pounds; this may do on paper, but it will not satisfy patrons. If his patrons would furnish him forty thousand pounds per day, he would pay them back six dollars per month or seventy-two hundred dollars per year; he could afford to do it upon so large an amount. Could build sheds and run them by women, but could not pay the patrons a living dividend by so doing.

JUDGE WILCOX had always found that in any business the shyster charged the most for his services. It was an important question and should be discussed fairly; if the prices charged five years ago were fair then, they are nof fair now; labor as well as real estate must come down; it not it is not fair; as it now is. The question is, " What is a fair price, etc." All men should have a fair compensation for their labor, but it should not reach extortion. Every person who is engaged in any legitimate business should make money, if they are good business men; but if cheese can be made in the East for one and one-quarter cents per pound, it can and ought to be done here. He did not believe the highest price always brought the best labor. He was in earnest in this matter, and wanted to bring it fairly before the dairymen. If all dairymen would keep their own accounts it would prove another thing; as it now is, all is left to the factoryman; he keeps your accounts, and at stated periods pays you just what he sees fit, and no more; the dairyman has no idea whether it is what really belongs to him or not.

Ward must speak once more in behalf of his patrons, who were not so stupid as the Judge would make them appear. They were satisfied with the manner in which his accounts were kept, and the price they received.

Wilcox: Do you have a committee to examine your books?

Ward: Yes sir, and composed of smart business men, too. They had access to his books at all times, and reported to his patrons as often as they pleased. Insurance is higher on our factories than on any other kind of property; the building good for nothing else. If you burn out your trade is lost, while if a merchant burns out he can move across the street, and in two days is as good as ever and his business saved. Insisted that skilled labor was always the cheapest; once tried a cheap man and he proved a very dear one in the end. My books are kept open for all whom they concern; every item was booked and had been for seven years.

Dr. R. R. Stone wanted to put in a word for the poor, persecuted manufacturer. As to the price as now paid for making butter being too high, it was not a fact; the maker had to guarantee the product and often paid many losses. To make butter and furnish everything, is small enough at five cents per pound; for less you would make a failure. Good factory butter could be sold to-day for thirty-four to thirty-five cents, while the private dairy sold slow at twenty-five cents. At these figures the dairyman could pay five cents, and then make five cents more for himself. Why should he complain? His experience and observation led him to believe that factorymen, as a rule, were not richer than lawyers or other men. There were great risks attached to the business; he had been at it for twelve years and he felt quite sure that he was a long way from being rich yet.

E. G. KETCHUM thought that most of the factories were originally built by the farmers, and were furnished the manufacturers; in fact many of them have no money in them at all; they are working up the farmer's milk with he farmer's money; in fact the farmers furnish the capital for the whole thing.

ROWLAND said: You take your milk to the factory; you receive a small paper, saying, so much milk, and at some subsequent time you were notified that so much money awaited you, as your share of the dividend for some particular month, and that was about all you knew about it. The books should be shown and a competent committee look them over and see if the yield is what it ought to be for the milk received.

DR. R. R. STONE: Always kept books and they were open at all times to his patrons, all of whom were satisfied.

M. H. THOMPSON asked DR. STONE if he wanted to be put on record as saying that no private dairy-made butter commanded as high price as the factory quotations.

DR. STONE: I am wrong there; they do. I know individuals about here who get it, but they are the exception and not the rule.

On motion, it was voted to have no further discussion on Topics 5 and 6; that No. 7 be now taken up.

"The best methods of improving and supplying the dairy, the different breeds and their adaptation for dairy purposes."

The following paper was furnished by C. C. BUELL, of Rock Falls:

C. C. BUELL'S PAPER.

"The best method of improving and supplying the dairy. The different breeds and their adaptation for dairy purposes."

The objective point in the dairy business, so far as the dairy herd is concerned, is to secure a large quantity and the best quality of milk. Given the quantity the quality is the controling consideration. Given the quality the quantity takes lead. Further, the kind of product, whether butter or cheese, or both, enters as an important element into the problem. Nothing has been more clearly demonstrated than this: that there is a marked difference in the milk of individual cows, and an equally marked difference in the milk from different breeds of cows; some cows give a quality of milk especially adapted to make cheese; others are emphatically butter cows. The same is true of breeds; the milk of the Ayrshire cow has long ranked very high for cheese making; the milk of the Jersey cow is unrivaled for butter.

These statements suggest the line of our argument. The dairy herd can only be improved by breeding from superior individual cows, and from superior herds of cattle, for the kind of business carried on. As sure as like produces like, so sure will improvement follow. In the application of this view no one need go astray. The principles of correct practice in breeding, are well established. One is, never to use any but thoroughbred males; any others, no matter how fine in form or how perfect in other indications, are uncertain; to use such an animal at any price will not pay. Not only use only thoroughbred males of the breed selected, but use only such as are brought by dams of marked perfection. We should consider not only the quantity and quality of milk produced by the dam, form, size, and disposition, but also size of the teats and *style of milking*, whether easy and graceful, or hard, and a stripper besides, perhaps; we have seen thoroughbred cows of perfect pedigree and high valuation, which we would not receive into our herd for actual use in exchange for many a scrub cow, held at not one-fourth the value; he would not use a male descended from such a cow no matter how perfect the pedigree.

To secure a dairy herd for profit through actual performance at the pail, we know of no better foundation than selections from common stock, or the grades of other breeds. The cows descended from such stock, sired by a male of a milking breed of cattle, will, as a rule, possess the characteristics of the male side of the family, and be really good dairy animals. There will be exceptions: a percentage of poor cows; as indeed there is among thoroughbreds themselves, which should be at once discarded from the herd; but in this direction and in this alone, we conceive, lies the road to improvement of the dairy.

As to the adaptation of different breeds of cattle to dairy purposes, I have had experience with common stock, grade Short-horns, grade Ayrshires, and Jerseys; I make butter; besides, I do not want a large, heavy cow for my pastures, therefore I have selected Jerseys; I have seen Jerseys that would have little value for me, but for the butter dairy, the superior type of Jersey cow, I believe to be much in advance of any other breed that I have had experience with. If I carried milk to the factory and pooled the product of my herd with that of others, or received so much a pound for it, I should not choose Jerseys; my neighbors who might have common stock, Ayrshires, Durhams, or Holsteins, would have too much advantage of me; I could not afford to produce good Jersey cow's milk for the same price as the milk of the other breeds named, but to go into my own milk-house the case would be altogether different. And this suggests what I believe to be true, that the factory system is, on general principles, inimical to the production of the best quality of milk, and hence to the breeding of dairy stock characterized by the production of a rich quality of milk. It is useless to expect anything else, for it will not come; the large milker will be the favorite among those who sell their milk, the rich milker will always be popular with those who manufacture the milk of their own dairies. We may as well drop this subject right here; I have little interest in breeds, as such, and do not expect to convince anyone who has. I would like, however, to see a radical change in the mode of dealing in high-priced dairy stock. The horse for speed is high-priced, because he has shown speed on the track, together with minor excellency, not because he is Hambletonian, Morgan, or any other stock. It is the greatest folly to pay a high price for a dairy cow, of whatever breed, whose value cannot be demonstrated by the amount of butter or cheese she is capable of producing. In this direction points the true way to improvement in dairy butter.

E. H. SEWARD said we now have only one mode of supplying the dairy, namely, the cow peddlers, who brought in good, bad, and very bad; this had been going on for ten years; it was the same in the East; they were now compelled to come West for cows, and thus the country was completely drained of good cows; the fact is, all our dairies, both East and West, are deteriorating; we must stop killing our calves; must raise our own cows; it is the only way he knew of. As to breeds there were many good ones. Among the Short-Horns, the Patten cattle, from Kentucky, were a good milking stock, at the seventeenth cross. We must look to our male animals and have none but from milking families. The Holsteins were good; they combined many good points, and were undoubtedly good milkers. We should endeavor to secure large sized cattle, if all other points suit.

On motion it was voted that all papers sent in upon the different topics for discussion, be printed in full in the proceedings, and that the reading of the same before the convention be omitted.

S. S. MANN moved that a committee of three be appointed to examine and report upon the different breeds of dairy stock, as adapted to our climate, etc., and that such report be published in the proceedings of the association. This resolution drew out an extended discussion, each breed having their friends and champions. The little Jerseys had their friends as well as the more exalted Holsteins, and the "thoroughbred" native also came in for her share.

MR. MANN said as the question had been discussed pretty freely, he really wanted to know the best breed, and thought a committee would come at the facts about as nearly as the whole convention; but if there was to be any feeling upon the subject, he would cheerfully withdraw the motion, which he did, when all breeds at once stood on a par before the convention.

Four o'clock having arrived the special order was now taken up, and the final location of the convention for next year was settled. After much friendly discussion, wherein Sugar Grove seemed to have the lead for some time, finally a vote was taken, when the Chair decided that Elgin appeared to be the choice of the Convention, and con-

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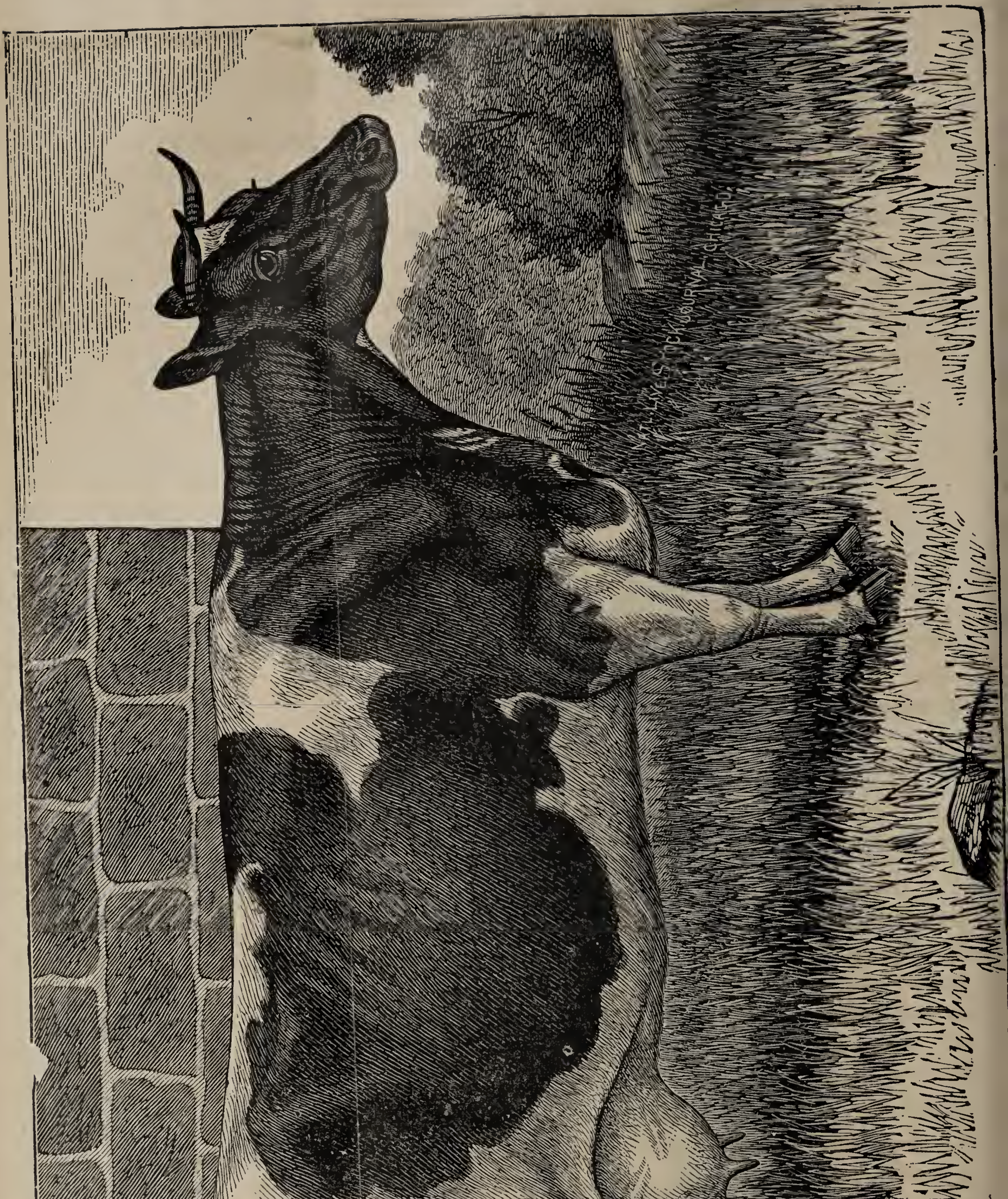

"MADAME SPAANZ,"

[illegible] GEO. E. BROWN, Elgin, Ill.

sequently the vote was made unanimous that the next Convention be held at Elgin.

On motion the Convention now adjourned to meet at Mendelssohn Hall at 8 o'clock, to listen to an address from DR. JOHN M. GREGORY, of the Industrial University, Champaign, Illinois, and GEN. L. B. PARSONS, Flora, Illinois, President Ohio & M. R. R. Co.

EVENING SESSION.

MENDELSSOHN HALL, WEDNESDAY, 8 P. M.

Convention called to order as per adjournment, whereupon GEN. L. B. PARSONS, delivered the following address, his subject being "Transportation and its kindred connections."

L. B. PARSON'S PAPER.

"Transportation: its merits, importance, and future, as connected with production and exchange."

GENTLEMEN: This, as I understand, is a meeting of gentlemen connected with the dairy interest, the promotion of which has become a matter of great public as well as private importance, a branch of production of rapidly increasing magnitude, and which has in a brief period of time, extended from the partial occupation of a few counties in the Eastern States till it engages the attention of large sections of the West; resulting already, not only in supplying home consumption, and preventing a drain upon our resources to pay for importations; but in adding the large sum of fifteen to seventeen millions of dollars annually, to swell the aggregate of our foreign commerce and restore health and wealth to the nation's finances. Not only do the great interests already involved, demand all proper attention and encouragement, but with these we may reasonably expect an almost unlimited increase in the near future, of a production which not only adds so largely to the happiness of the human family, but to our national wealth.

In the southern part of the state, where I reside, though a land of corn and grass, yet we have hitherto given so little attention to dairy production that it would be premature for me to expect to add to the interest or utility of your discussions of this subject; and although largely interested in general agriculture, I should hesitate to offer suggestions to those whose larger and more practical experience better prepares them for instructors. On these topics, I come rather as a learner. But I have thought that some remarks upon a subject of importance to all branches of agriculture, and upon which largely depends its future development and pecuniary success, might not be inappropriate to the present occasion. I mean the ways and means of exchanging our surplus products for those of other sections and nations: in other words, of getting them to market: or, in short, the subject of transportation. "Everybody," says one of our most eminent writers on political economy, "exchanges. Society is one vast hive of buyers and " sellers. All men have a natural right to exchange their labor or their " property with their fellow men. The laws of exchange are based on " nothing less solid than the will of God."

The greatest freedom is the greatest good, and every facility should be given to this end. It is of vital importance to oach individual, every " section, the entire nation, "and it is a high-handed infringement of natural " right, a blow aimed at the life and source of property, when any authority " seeks to restrict, or refuses to encourage the freedom of exchange, except " it be justified by solid proof that other private or public rights, are " infringed thereby."

The productions most natural to our section, are grain, meats, and those of the dairy.

South Carolina produces rice; Louisianna, sugar; Mississippi and other States, cotton; China and Japan produce teas; South America, coffee; Germany and old and New England, manufactures. We need a part of their surplus, they of ours. How we can effect these exchanges with the least possible delay, risk and expense, is a great problem, in the right solution of which all people and nations are alike interested. Every unnecessary delay, risk or expense, obstructs this result, to the general injury and the just good of no one. Delay increases interest on capital; risk, insurance; and all undue cost hinders or obstructs. Civilization with its countless blessings, has ever followed in the track of commerce. Improvements in the mode of transportation have revolutionized nations, and brought the most distant into intimate relationship. The order of providence seems to be to unify humanity, to break down the barriers erected by the malice or folly of man, and make of one nation all the families of the earth. Thus, to-day we are the near neighbors, not only of

England, and France, but of Russia, China, Japan, and the remote islands of the sea. In turn those now unimportant cities and states of Tyre and Sidon, Genoa, Portugal, Spain and Holland, have through their commercial superiority commanded the seas, and gathered untold millions of treasure.

And to-day the history of the past, repeating itself, shows that the relative power and advancement of the leading nations of the earth is largely in proportion to their relative facilities for inter-communication and exchanges. In the front rank of nations in this respect, now stands England, holding a supremacy justly our own, and which would have been but for our civil war, when piratical cruisers, let loose by her criminal policy, swept our commerce from the ocean, and which through our unwise navigation laws, is but slowly reviving.

A glance back within the memory of many of us, shows a wonderful advance made in our own country in facilities of travel and transportation; a greater advance than the world ever before witnessed in centuries of time. Sixty or seventy years ago population and business centered along the sea coast, or mainly followed our navigable water courses. In those days the stage coach and the lumbering four-horse Pennsylvania wagon, were the only means of interior travel, and movement of products. Then came the Erie Canal, the grand opening of which some of us remember, quickly populating central and western New York, and opening wide the gates to the great West. It was then thought we had reached the goal of all reasonable expectation. Canals were the mania of the day, so much so that an eminent engineer pronounced rivers as mainly useful and designed by God for feeders to canals.

Then came our lake and river steam navigation with our national roads. And while the march of emigration and development was wonderful, yet still the long, tedious, and expensive mode of travel, requiring ten or fifteen days to reach what is now the center of our population, rendered the greater part of our own State valueless to the settler beyond securing the simplest means of existence, and almost wholly shut out from the world, so far as having any market for its surplus products.

Then came within the memory of many of us, in the order or providence, the greatest improvement of all, the railway, and cars moved by steam equally over mountain and plain, across rivers and deserts, penetrating the remotest sections, diffusing wealth, comfort, civilization and christianity with their untold blessings, through the land, and to a large extent superseding lake and river navigation, as they had superseded stage coaches and canals, and combining all that seemed desirable in transportation, viz.:

rapidity with economy, safety of movement with certainity of time, all united with the greatest comfort. So rapid has been this great work, that we have scarce had time to duly estimate its magnitude or importance.

It is but little over forty years since the first railroad was constructed in the United States, while we have now nearly eighty thousand miles, with an aggregate of investment of about four thousand five hundred million dollars, an amount which more than doubles our national debt, and with an annual gross receipt amounting to five hundred millions, and of net earnings of over one hundred and eighty-six millions, or more than twice the interest on our national debt; and moving the last year over two hundred millions of tons of freight. Of this eighty thousand miles of railway, more than one-half have been constructed within the last ten years, and thirty-seven thousand miles, or near one-half, are located within our favored Western States. In extent and cheapness of construction no other nation compares with ours. The cost of seventeen thousand miles of railway in Great Britian is but one-third less than our eighty thousand miles; the nominal cost of ours, (which is much above the real cash cost,) being about sixty thousand dollars per mile, to one hundred and eighty-nine thousand for those of Great Britian.

Nor have these works been unremunerative to their originators. Like all investments some have been largely successful, even on wasteful construction and worse management, while some have proved less so, or valueless.

Owing to the lack of statistics, it is impossible to arrive at very accurate returns, but I question whether as a whole, any of our large interests during good times paid better, and our best authorities place the net income during the last year of unusual ruin and prostration of business, on all the railroads of the United States, at an average of three per cent. And when we consider the sacrifices made on securities sold, the wasteful and even corrupt expenditures in construction and management, the large amount of fictitious stock divided without cost, and the extensive process of watering stock, I do not think it an exaggeration to place the income on money actually invested so high as at least six per cent.; a better interest than agriculture or manufactures have paid, as a whole, during the same period. Now, if so great an advance has been made under such circumstances in the past, what may we not expect from our present stand-point, in the future. For myself, I believe so far as a less cost of movement of production is concerned, we are yet to have a great change for the better; we are still in the infancy of the work. The true principles of transportation are yet but partially understood and still less acted upon. They are now engaging and will continue with increasing power to engage the best energies of our best minds, in their solution.

To the producer, this is of the greatest moment. Every reduction adds to the value of land and the result of labor, and enables products to be removed to markets hitherto inaccessible. Every such reduction renders more abundant and cheaper the necessities of life, alike to the rich and to the poor. A few years ago and the millions of bushels of cereals, tons of meats, and dairy products of this great valley, now supplying cheap food for vast populations in both hemispheres, could not have been sent to them. And to-day the same may be said in regard to a large share of our vast product of Indian corn, though so cheap as not unfrequently to be used for fuel, and which if we could find a cheaper proscess of marketing, could be increased almost indefinitely. What then is to be done in this direction? How can we promote this great interest? What do we need? What difficulties are there in our way? These are questions of the greatest moment but to which time will only permit a hasty glance. What do our pruducers need which they can in justice ask for? I answer: First they need more regular and fixed rates of transportation. Without this the producer is in a sea of uncertainty—ever in doubt in what to engage his labor and capital. At the rates of to-day, he has a fair margin of profit, but what of to-morrow? An arbitrary advance when he is ready to ship or sell, may result in a prohibition or a loss.

You have no doubt all had or seen an experience like this. The evil bears with equal force upon middle-men, who are obliged to protect themselves from this risk by paying reduced prices; or in case of loss, seek to recover it in the future, and thus sooner or later to obtain it from the producer, who must pay for all these extra hazards or losses. So that if he gains this year, it is but to lose it the next.

There are no doubt, points, where owing to water competition or other causes, it would be difficult to secure always fixed reasonable rates, but not so in most cases. Most of these rapid fluctuations are the result of the arbitrary will of a few or the incompetency and reckless management of men seeking purely selfish ends, depressing to-day in order to monopolize and extort to morrow.

Second, again the producer needs, and should have, more equal rates in proportion to distance. It is most natural that a man should feel aggrieved and complain of unjust discriminations at being charged fifty dollars per car, while at a more remote point but thirty or forty dollars is charged; or that he should be obliged to drive his stock or move his freight for miles to a station of low rates, when it could be just as easily taken at a nearer one, and it is not easy to convince him that there should not be found some remedy. We all know how frequently through-freights are taken in preference to local, and often at unremunerative rates, for which loss the local business is made to compensate.

Third, and most important: Producers ask such rates as shall give a *just return* on a *fair amount* of capital, *fairly invested and fairly and economically managed.*

As a general principle of justice, I think no one will deny the correctness of this position, either as applied to individuals, corporations, or the public. It is the principal of a fair exchange; a *mutual benefit* at a fair *mutual cost.* And if there are legal or technical difficulties at present intervening to prevent its application, the equitable claim is still good; and I believe the legal maxim that every wrong has its remedy, will eventually hold true and apply to this case. Whenever we approach this subject we are reminded of *vested rights.* Rights imply corresponding duties and obligations. Corporate rights are given to the few, that the many, as well as themselves, may be benefitted thereby, and in due proportion—not to be used for oppression and injustice.

And while fully recognizing the immense value of these works to the country, their blessing to the world, while duly regardful of the large aggregate of wealth invested, of all the rights of individuals and of property, yet, as these works have been constructed for private gain, just as men engage their capital in agriculture, manufactures, or other pursuits, I see no special claim for consideration, or why we have not the same right to seek redress for wrongs through the press, public opinion, legislative action, and the law, as in other cases. And no one who understands the subject can claim that we are at the present time receiving, generally, rates according to the rule I have laid down. In the first place, the nominal cost or capital basis on which returns are claimed ,is generally far beyond the real one. This is the result of a variety of causes; sometimes of bad judgment in the location of roads, or ignorance and incompetency in their construction; sometimes to reckless extravagance, often to large sacrifices on securities from deficiency of proper real capital on which to base a credit, too often from corrupt rings and "credit mobiliers," speculating out of construction or management, dividing large quantities of stock, as profit, or for corrupt offices for which only imaginary services have been rendered; often again by the process of watering, when through prosperous times or too high rates, dividends becoming large, instead of making a just reduction to the public in rates, the stock is doubled or largely increased, upon which dividends are demanded; and then if times change, business declines, and dividends are reduced, it is proclaimed that railroads are a bad investment and do not pay. Take for example a railroad with a nominal capital basis of sixty or eighty thousand dollars per mile, which could be constructed and equipped for half the sum in money fairly expended, is it right in *equity* that the public should be compelled *perpetually* to pay dividends on the larger sum? For instance, the New York Central Railroad is said to have had, through the watering process, a capital basis of more than twice its actual cost when Commodore Vanderbilt obtained possession of it, and all know how he added *eight millions* thereto from accumulated profits over dividends, which was an amount *legally* perhaps, but not justly extorted from the public; and now it is expected that dividends will be *perpetually* paid on such a basis. Though there may be no legal remedy, yet is there any justice in this? Our express companies are also drawing dividends to an enormous amount on a like false basis. Now is there *never* to be any remedy for such inequities? Are we *forever* to pay many millions on purely imaginary capital, merely because certain men were granted privileges based upon the principle of mutual and equal benefit? These are serious questions, demanding not wild passionate action, not action outside the law and in violation of just rights, but of calm, earnest discussion and consideration; not to be put down by the mere outcry of vested rights—which are rather clearly vested wrongs—if vested at all. They may be legal, but surely not based on any principle of reciprocal justice. But again I assume, not only that compensation should equitably be only upon a fair amount of capital, fairly invested, but that that capital should be fairly and economically managed.

What right has one corporation to ask the public to make good its losses arising from its own wrong, its incompetent or corrupt management, more than another, a railroad more than a manufacturing company, or an individual? Should not the loss justly fall upon the negligent stockholders? What would be thought of an individual or a bank that sought thus to recoup for such losses?

Now we all know how much more easy it is to criticise than to do better, to point out a wrong than to correct it, or even to show how it can be corrected. And here, when we attempt to show how these necessities of the public are to be secured and wrongs righted, we encounter these difficulties in their fullest force.

For years this railroad question has engaged the most careful attention of the best minds of this country and Europe, not only in regard to the great economic question involved, but because of its relation to the government itself; and its probable bearing upon the future of the country. A few years ago, a joint commission of the British Parliament, composed of the ablest men of the kingdom, had the whole subject under most elaborate consideration for a long period of time; and strange as it may seem, about the only conclusion arrived at was that during their forty years of experience their railroad legislation had never accomplished anything which it sought to bring about; and had never prevented anything it sought to hinder. And a subsequent report comes to the alarming conclusion "That the time was soon coming when the question would have to be decided whether the government would possess the railroads, or the railroads possess the government." In our own country, we all know how commissions upon commissions have been raised by our different State Governments and reports made thereby, and though we have not accomplished apparently very much, yet I believe great good will be the result of all this thought and investigation, and that in the language of Charles Francis Adams, Jr., one of the railroad commissioners of Massachusetts, "the subject is rapidly being discussed down to certain principles and practical issues, which can be so formulated as to bear directly and successfully on this absorbing subject," and establish the true relation of these vast corporations to the government, and the public; so all shall act in harmony and as they were designed, for mutual good.

And here I ought to say that many of our ablest and best railroad managers are themselves keenly alive to this subject, moved by a sense of its importance, not only to their own real interests, but from a consciousness of the higher questions involved, and who I feel confident will, as correct principles of practical application are ascertained, aid in securing or at least assent to such legislation as shall restrain more selfish, reckless, or corrupt operators. I have such an abiding faith, not only in the intelligence of our countrymen, but in their moral sense, as to believe them capable of seeing and ready to sustain the right, so that wrong cannot permanently continue. It is often claimed that these subjects should be left entirely to competition to regulate, and that thence will come all needed reforms, but here again observation and experience prove the very reverse, and upon principle must continue to do so.

In order to secure safe competition in any business, capital must easily be placed in or removed therefrom, which can never be the case with railroads. There capital is fixed and permanent, and a competing line is sure either to be crushed or consolidated, and the public made to sustain the loss. For a practical illustration of this we have but to recall the contest of the great Trunk Lines last year; for a time rates were for those lines and their allies, ruinously low, but it all ended in a stronger combination than ever, and one which from their sad experience is not likely soon to be broken.

Among the *favorable* agencies in active operation is the greater economy and reduced cost of transportation to the railroads themselves, arising from the many improvements constantly introduced, and especially in the use of steel rails, costing now little more than iron, and lasting at least three times as long, and further in banishing a great number of fast freight lines owned by outside parties and rings, in which too often managers have themselves been interested, and which have not only profited largely at the expense of the roads, but tended to a general demoralization.

Again, something is annually gained by judicial investigation and decision in settling principles, and by prudent legislation based thereon. Among the remedies yet to be applied are laws holding directors and officers to a much more stringent accountability—demanded alike for the good of stockholders and the public, and by the more rigid enforcement of existing laws requiring fuller reports to State authorities, and giving commissioners the fullest power of investigation; and when it is proven by the latest reports that rates have declined on an average through the country over twenty-five per cent. during the last seven years, surely we need not be hopeless of the future. But over and above all agencies and at the basis of this, as of all reforms in a popular government like our own, is a right public opinion formed by agitation, producing the fullest discussion, and all the power of the press brought to bear upon the questions involved. Reason and experience prove that with this, sooner or later, the right will triumph. This may cost in time and money, but as "eternal vigilance is the price" not only of liberty but of equal and just laws and their proper administration, so he who is unwilling to pay such a price, fails in his duty and should not expect the rights of an American citizen or the enjoyment of the priceless blessing of a government which, with all its faults, is the best the sun in its centuries of light has ever shown upon.

Had time permitted I had intended to have spoken upon the advances being made in the construction of narrow-guage railroads, with their greatly reduced cost of construction and economy of operation, from which many well advised persons are sanguine of most favorable results, and also of the great work going on at the mouth of the Mississippi, under Captain James B. Eads, and its probable results upon the Northwest as a most efficient source of competition in cheapening transportation for all that section.

At the close of GEN. PARSONS' address, DR. JOHN M. GREGORY entertained the audience for about one hour and a half. Below we give the substance of his lecture, which was well received by the audience.

DR. JOHN M. GREGORY'S ADDRESS IN BRIEF.

In referring to the hard times, he said that they existed not only in this country but in others, and the best political economists claimed that it was of longer duration than ever before known. A noted Englishman gave the cause of hard times as being over-expending and over-consuming. From this he proceeded to argue that over-consumption was indeed the cause of hard times; that while the net production of the country was about $500,000,000, of that sum about $3.50 was saved out of each $100. We spent from $8,000,000 to $10,000,000, and burned it in gun-powder; states, counties, towns and school districts plunged into debt. In Southern Illinois the farms were heavily mortgaged, and the owners had to send the interest annually to New England. Much was said about the credit system, but man could not live without credit; if he did not buy things on credit he expected that cheese and corn would command the same price next week as they did this. Germany was having the worst of the financial crisis, although she had free trade and French money, yet some of her citizens jocosely remarked that they wanted to go to war and be compelled to pay a heavy indemnity, thereby hoping that when they came out of the war they would be as well off as France. There is little or no revival in manufactures in this county. The improvements made in the past one hundred and fifty years, such as railroads, steamboats, cotton-gins, power looms, the telegraph, both on land and sea, the various countries transmit letters of credit from one to another, received a passing notice from him, to show the progress made by man. There is no limit to the power of machinery that is being made. The work of the millions has passed into the hands of the few, and they are not done yet; by and by, perhaps one machine will be invented which will superintend all other machines. The time is not far distant when the sunshine will be used for heating our houses and driving our engines, and some say that the sunshine in fair weather will be gathered up for use in the stormy, cloudy weather.

The Convention now adjourned to meet at the Court House to-morrow, at 9 a. m.

THURSDAY, 9 A. M.

After calling the Convention to order the President announced that he had received an invitation from the proprietors of the Illinois Condensing Company, for all the members of the Convention who wished to visit their works in this city.

On motion the Convention adjourned for one hour to accept this invitation and visit the works.

Upon the re-assembling of the members again, the discussions were resumed, and Topic 8, "Grasses, the best varieties for hay and pasture, as adapted to our climate," was called for, when THOMAS MILSOM, of Flora, Illinois, furnished the following paper:

THOMAS MILSOM'S ADDRESS.

MR. PRESIDENT, GENTLEMEN OF THE CONVENTION: I cannot see for what reason the parties who made this programme selected me to open the discussion on this important subject: "Grasses, the best varieties for hay and pasture, as adapted to our climate." I am certain there are men in this room, some of whom are to follow me, that have had far more experience and know a great deal more about it than I do.

I have for some time paid a good deal of attention to grass, for in a country like Southern Illinois, where our soils are thin, in places very flat, and again in others very subject to wash, and where we have raised nothing but corn for the last—well ever since the prairie sod was first turned under; grass is our only salvation; but what varieties I do not think I have thoroughly solved.

Red Top ranks among one of the foremost grasses of Southern Illinois; perhaps on account of its adaptability to our wet flat lands, or because the seed is always in good demand. (We have shipped from the town of Flora, alone, this summer, over fifty thousand bushels of Red Top seed, and the hay from which this seed has been taken can be bought to-day for one dollar or one dollar and a half per ton.)

The majority of our farmers seem to have a prejudice against any other grass than Red Top, and say our soils are not adapted to the growth of any other variety. It is true Red Top is a good variety for our climate on account of its rooting deeper, standing drouth better, and is less subject to the army worm than any other grass, Clover perhaps excepted ; but when we want good hay, quantity is not to be allowed to altogether supercede the quality of the material needed.

Timothy, or perhaps Timothy and Clover, are our best varieties for hay, but the question is, can we raise them ? No one doubts but what Southern Illinois is one of the best wheat-producing sections of our State, and where good wheat can be raised, Clover can. We have only one objection to Timothy, and that is it takes more alkili than any other grass, and our soils have less of this to spare than any other ingredient.

The great objection to Timothy seems to be, with the most of farmers, the trouble of getting a stand. Now we have never known a farmer who has thoroughly cultlvated his land but what has got a good stand the first year. Our farmers are to apt to blame the climate and soils when they themselves are to blame. If a piece of land is dirty it should never be put in grass ; my experience has been, that if a field is wanted in grass and it is dirty, it is the best policy to summer fallow it, get it in good condition and sow your seed in the fall ; I have never seen it fail. Then the best grasses for hay are Timothy and Clover, first, because they are adapted to our climate and soils ; second, because they yield as well as any other grass ; third, because stock prefer it to any other hay ; and lastly because they contain more nutriment than any other grasses.

We might speak of "orchard" grass here as a variety for hay, and would recommend its cultivation to those who believe in it, for it is certainly adapted to our climate—in fact we think it will grow anywhere, but after it is grown, what are you going to do with it. Prairie hay can be bought for less money than orchard grass can be raised for, and it is certainly as good, orchard grass being only ten per cent better than the sage grass grown in the South.

A word in regard to Clover—our best clover lands are our low, flat, craw-fish prairie lands, where one would think nothing would grow ; some of our farmers seem to have the idea that clover will only grow on "hazel land" or the hill-sides of timber land, While they on this kind of land raise large crops the first and perhaps the second year, (if the winter is not too severe,) yet it will sooner or later, freeze out; when in the low, flat lands it will stand for from eight to ten years. Have seen two and one-half tons per acre cut off this kind of land.

As to what grass we should use for pasture I do not think any one grass alone is good. We should mix them, and the more varieties the better, as long as you leave orchard grass out. Red Top, Clover, Timothy, and Blue Grass, make in our region a splendid pasture, although in time the Timothy will disappear.

Our county though, as a general thing, is not adapted to the growth of Blue Grass, for the reason that our soils do not contain enough lime, but we have no doubt as the country gets older, and artificial fertilizers are more used, our soils will become more adapted to the growth of this best of all pasture grasses. But before we can succeed in the cultivation of grasses, we must first put our land in shape to receive the seed, and this can only be done by thorough cultivation; plow deep, pulverize well, and thoroughly drain your land, and then whatever grass is best adapted for the purposes for which it is needed, is the grass to raise.

We might speak of grass as a manure, but will only say land should never be allowed to remain idle without being seeded down in some kind of grass. There is no way in my judgment that land can be so cheaply improved as by turning under a good stiff sod. This will be very apparent when we consider that the sod (Red Top,) on an acre of land, to the depth of four inches, will make four hundred cords of sod, which being made into compost, is equal to one hundred loads of barnyard manure.

H. W. MEAD was not a speaker. What little he knew about grasses, he had learned from experience. He used mostly Timothy and Clover. Red Top done well, but would run out all other varieties. Blue grass was good, so was June grass, to mix; Red Top, Foul Meadow, and Blue Grass, were about as good as any he had tried; it made a good, fair root, did not easily kill out, would remain as long as any variety he knew of.

MR. SHERMAN asked as to how he mixed Timothy and Clover, when seeding.

MR. MEAD: I use three to six pounds of Timothy to one peck of Clover.

E. H. SEWARD: Had had some experience with grasses. Liked the plan of MR. MEAD; to mix a variety of seeds was good, for all varieties do not ripen at the same time; this plan would come nearer to always having good fresh pastures than any other plan he knew of, for as one variety would ripen and become dry, another might be green and fresh. Also White and Red Clover were good; Red Clover was a biennial, and died out every two years, but when sown on good land would yield a large crop; but was best when mixed with Timothy. He once fed his cows all Clover, when he found they gained two or three pounds per cow; it should not be allowed to grow coarse and large; it should be sown thick, so that the stalks will be fine.

I. BOIES thought no hay ever fed a cow would equal clover; it was worth one dollar per ton more than any other hay, but as to pasture he would not say a word in its favor. All kinds were good mixed, but the more Blue Grass and White Clover the better.

B. COX: Does it not take great care and trouble to cure red clover ?

I. BOIES: It takes a great deal of faith to cure clover, both in the weather and all that pertains to it. It should not be exposed much to the weather, and should be made in small cocks, and thus let it cure in the field.

L. BARTLETT: How long does it take to cure so that it is fit to put in barn or stock.

I. BOIES: Said he followed close to the mower; it took but little more time than Timothy and Clover.

S. K. WILLIAMS: What do you do in case of long rains while in cock ?

BOIES: Let it remain. Do not stir or expose it to the air. Would always raise clover; could not run a dairy without it. The bunches, when dry, should not weigh over fifty or seventy-five pounds.

H. W. MEAD: How is orchard grass for hay? Or is it only adapted for pasture?

BOIES: Had tried it for hay, but could not succeed in getting a good stand; it easily killed out.

MEAD: Had also experienced the same difficulty.

M. H. THOMPSON inquired if anyone had experimented with Alfalfa?

MR. WATTLES, of McHenry, had found it good for low land, but not well adapted for high rolling lands.

MEAD: Had also tried Alfalfa, but did not succeed; land might not have been right.

BOIES: Had also tried Alsac, but with no success.

MR. PERRY said it must be sown on dry land; had seen it at Champaign; it was not a success, but he thought that on dry land it would do better.

WM. FRAZIER: Had also tried Alsac, but with no success.

BOIES said he did not sow white clover; it was natural to our soils and would creep into any meadow if it had a chance.

Topic No. 9, "Is it profitable to keep more cows than the farm will sustain," was now called for.

I. BOIES said he had always argued to keep more cows; he looked at it a little differently now; now he would say keep more cows on less land. E. W. STEWART of Cataraugus Co., N. Y., kept thirty cows on one hundred acres of land for seven years, as pasture; then he mowed his land and fed his cows, when he found that he made eight hundred dollars per year more when he fed than when he pastured; thought the same number of cows could be made to yield double when fed, therefore he now argued to keep less land and more cows.

THOMAS BISHOP: If a cow gives five gallons per day on grass, will she give ten if fed on hay? He had found that cows coming in in September done much better than cows which come in in April; i. e., for the year. Kept a few cows and kept them well; could get more from a few well-kept cows than from many more poorly cared for.

JOHN R. MCLEAN expected that those who preceded him would exhaust the subject, but found they had left a good deal for him to say. Was a small dairymen but a very early one; i. e., he began a great many years ago; he kept eighteen cows on his one hundred acres of land; raised a little of everything; rye, corn, oats, potatoes, etc. Was ready for reverses. Wanted to come out square each year. Kept the farm to "fall back on." Thought it the safest way to keep no more cows than the farm would support; could keep twenty-five just as well as eighteen; had plenty to keep them on; kept six horses; had no use for them only to pay taxes on; thought every dairyman should raise his calves, or at least enough each year to keep up his dairy. Raised six hundred bushels of oats. Could sell his straw for four dollars per load. His farm was now rented, and he could not tell exactly what was done.

I. BOIES: How did you find the market when you first began?

MC LEAN: I received ten cents the first year, per gallon; the next year five and one-half cents; in 1861 five and three-fourths cents; in 1862 six cents per gallon; in the fall of 1863 he got twenty-three cents per gallon, and all other things were in proportion. Had sold good butter for seven cents per pound when it took seven pounds of butter to buy one yard of cotton cloth; prices had ranged from five and one-half to twenty-three cents.

The Committee on Nominations made the following report:

To the Illinois State Dairymen's Association:

We, the undersigned, Committee on Nominations, submit the following. We recommend that the old officers who served last year, be re-elected for the ensuing year.

On motion the report was received and adopted and the Secretary instructed to cast the entire vote of the convention in favor of the same. Whereupon the vote was taken, when the Secretary cast the vote as instructed, except for the Secretary, wherein he declined to vote for himself.

On motion the chairman of committee was instructed to cast entire vote for Secretary, which was done, and the vote declared unanimous.

County Trustees were then appointed, as follows:

Kane County—G. P. LORD, J. R. MC LEAN, C. H. LARKIN.
Cook County—HON. JOHN WENTWORTH, DR. KENNICOTT, A. H. DALTON.
Ogle County—J. DAVIS, T. H. BAKER, A. J. NEGERS.
McHenry County—L. W. SHELDON, R. M. PATRICK, H. M. THOME.
DeKalb County—HON. WILLIAM PATTEN, R. ELLWOOD, T. H. ST. JOHNS.
Knox County—A. J. MILLER, GLEASON BREED, C. J. FERRIS.
Clay County—GEN. L. B. PARSONS, THOMAS MILSOM, B. B. INGRAHAM.
DuPage County—IRA ALBRO, PETER PRATT, A. S. BARNARD.
Stephenson County—JOHN SMALLWOOD, S. F. HENDERSON, JOHN SWEZNA.
Boone County—L. W. LAWRENCE, B. CORNWELL, T. E. MUNN.

On motion adjourned to meet at 1:30 p. m.

THURSDAY, 1:30 P. M.

Convention called to order as per adjournment. On motion it was voted to take up Topic No. 15, "The best feed, quality and quantity, at the different seasons of the year, for cows from which butter is the chief product desired."

PROF. F. H. HALL said this was an interesting question, as most of our common foods are either fat or flesh formers. Had made some experiments this year. It requires two pounds of flesh and six pounds of fat formers to sustain life; we must then feed beyond this point to get either growth or profit. Red Clover is a flesh former and is as three to seven as a fat former; it was nearly as one to two; he could not get exactly the right proportion; changed his feed to oats and corn meal; was off two pounds per day in yield. In winter a cow will eat as two to ten of flesh and fat formers; Timothy hay has just about these proportions, but cows could not eat and digest enough hay to produce what we desire.

Clover hay has an excess of flesh former; so has bran; and should not be fed together. Oil meal is a great flesh former; corn meal is as sixteen to twenty-eight; corn fodder is rich just as corn is; clover and corn fodder go hand in hand; cows will often crave for oat straw, because it is a fat former and should be fed with clover; could tell just how much must be added to oat straw to make it just as good as Timothy hay. Had experimented as to sweet corn; his milk grew poorer and poorer; stopped the corn fodder and all was right again; kept the Jerseys; liked them best.

D. C. SCOFIELD wanted to know if any experiments were being made at the Industrial School at Champaign, in dairying?

He learned there were none, whereupon he offered the following resolution, which was adopted:

"Resolved, that the Illinois State Dairymen's Association appeal to the Illinois Industrial University that they take up experiments relating to economy in feeding and kindred subjects connected with dairying."

Thomas Bishop said if corn fodder is of no use he was glad to learn it, for some of his neighbors often cut up twenty acres; now if we are losing all this labor, let us quit it.

Jno. Periam, of the "Prairie Farmer," said that to make experiments which would be of real value to the dairymen of Illinois, would cost a great deal of money; there should be three stations, one north, one central and one south; these would cost twenty thousand dollars each, which during these depressed times, would look like a large sum for those engaged in other pursuits, who were taxed equally with us to keep them up. He thought the Industrial University would make experiments as soon as they were able; in fact, they were commencing now; he thought the school was coming every year nearer and nearer what we would like to have it. We could have much to do with shaping its course, if we saw fit.

Topic No. 13 was again taken up, when S. K. Williams read the following paper:

S. K. WILLIAMS' ADDRESS.

"What is the best and most economical method of handling milk to make butter?"

Mr. President and Gentlemen of the Convention: I do not propose to describe in detail the *modus operandi* of making butter, but state a few facts. Good butter cannot be made from impure milk, consequently good pure feed and pure water in abundance must be furnished the cow. It is not wise in summer or winter to permit cows to drink from sloughs or stagnant water, but be furnished water from running streams or from the pump, or to wade in filth and mud to their necks to get to the pasture or through the pasture. Nor is it wise in winter to permit cows to wade about in yards full of water, mud, or manure, or to stand in stables wet or muddy or with broken floors, or in anywise unsightly, or unclean, or offensive to the most delicate smell.

Odors of all kinds, either animal or vegetable, must be excluded, and cows carrying their afterbirth should not remain in the flock.

CLEANLY MILKING: After the feed and water has been attended to, and the stables properly lighted, ventilated and made warm in winter, the next important duty is cleanly milking. Yes, cleanly milking! I cannot give you the one hundredth part of the uncleanly practices of milkers, being for the most, persons who have no interest in the matter except to dash from cow to cow and get through the job as soon as possible.

Yesterday after arriving in this city I visited the inspector of milk at the Condensing Factory, and asked him, shall I, in this convention, describe the dirty practices of milkers? Yes, Yes, he says, by all means, and when you have told all you can, the one-half is not told.

MILKING, HOW DONE: Forty cows are to be milked; they have come from the pasture, in the spring, into the yards, after wading through deep mud holes in the pasture, and the yard has not been cleaned of manure for a year or more and they still wade into the stables with udders, sides, flanks and bellys in the condition you would say they must be; four milkers commence; the cows need washing and careful cleaning; do they get it? No! The first man commences and finds his hands at once full of muck; he throws it away—what does not go into the pail, and still goes on washing the cows teats with milk, taking care that all does not get safely into the pail. Number two, the next milker, finds his cow not so bad, and he goes on, taking no care to clean his cow of hanging dirt or lumps of manure, and he too, is soon dashing away with thumb and finger, dipping them in the milk every alternate stream, and when he is done with that cow, she is in the condition she should have been in when he commenced. Number three is milking a restless cow, and pail one-half full of milk, she raises her foot, puts it into the pail and forces it to the floor; the milk is not spilled; the foot is removed and big lumps of manure skimmed out with dirty fingers; milking resumed and milk emptied through the strainer in the can and sent to the factory. Number four, the boss, and maybe the owner of the place, is milking a gargety cow, and milk thick or watery, or a cow that has calved but twenty-four hours and it will not do to have all this milk fed to the hogs, and so it is sent to the factory, saying, "I am no worse than my neighbors." If such is the summer management of cows, what is the winter treatment when the cows are for the most part fastened in dirty stables? You may answer. These practices so far are neither wise or economical, and yet we expect and compell our butter and cheese makers under these circumstances to warrant their work or goods. I will digress a little and assert that the grand reason why our butter and cheese breaks down so soon after being made is fermentation, caused by improper handling the milk before it reaches the milk room or factory.

Another difficulty in the way of making fine butter is the faulty construction or location of the butter room or factory.

No vegetable cellar, or cellar of any kind or room adjoining a cooking apartment, should ever be used for handling milk. Neither should the factory be so constructed that the sewers or any thing around the building will become a pest hole, producing a stink that will sicken a passing horse. Neither should the well under the building be so arranged as to become a receptacle for the drippings from the floor of the making-up room, or be left uncovered to form a rat-trap to rid the place of this nuisance.

The best method of handling milk to make butter is to employ thorough bred men to produce the milk, men not afraid to use their muscles as well as brains, men who can milk a cow or harness a horse as well as drive him, or if need be, become a dining room servant in the cow barn. This kind of thorough bred men who are willing to attend to the details of butter making and farming in general are the men who are to place our butter and cheese on a par with the best in any market.

"*Manner of setting milk.*" On this point there are perhaps more theories and more practices than upon any other part of the work.

First, We have the small pan system with it advantages and advocates.

Second, The large pan system with its various attachments.

Third, Deep setters or pails used mostly in water.

Fourth, The air duck (sub earth) system, in which the cool air is the great motive power to cool or warm and regulate the whole thing. And

Fifth, The submerged system, where air is excluded and milk sealed up tight, and besides, there are many other theories and practices, all of which, no doubt, in the hands of an expert would be a success, while any one and everyone of these systems would be a grand failure in the hands of a careless, lazy man.

Pure, unadulterated milk removed from the stable soon as drawn from the cow, and its temperature at once reduced to 60° and held until matured at from 58 to 60° in a room expressly for raising cream, and for nothing else, will always eventuate fine butter, other details being properly attended to. I now offer the following resolution, viz.:

Resolved, That this Association does hereby express its emphatic disapproval of the various uncleanly practices so prevalent in handling milk where produced, and do strongly recommend to each public factory the appointment of an inspector, whose duty it shall be to ascertain from time to time, by personal inspection, whether each patron of the factory is handling his milk so as to preserve its original purity.

A member asked as to the proper degree of temperature for cooling, for butter.

Israel Boies had tried different degrees of cooling; had found about 65° to be about right; 55° is not as good; if we get below 65° we injure the butter qualities; for private dairies no cooling at all is best.

The committee appointed to offer suitable resolutions in memory of members who had died since our last meeting, reported as follows:

Whereas, this Association has learned with deep regret of the death of Robt. W. Stewart, of Hebron, Ills., one of the earnest members of this Association, and a successful dairyman, and also of the death of H. L. Ford, of Geneva, Ills., also a member of this Association. Therefore, be it

Resolved, that we tender to the families of the deceased our heartfelt sympathies in this their affliction, and that the same be printed in the proceedings of this convention and copies sent to the families.

The above was unanimously adopted.

H. C. Mead, McHenry, said that the private dairies in his locality could always command a good price for their butter; people come for many miles to buy their butter of private dairies, rather than patronize creameries; in fact, the private made butter is the best. He used the Cooley plan and there is no doubt but what it is the most cleanly. He well remembered when the early settlers used the corner of a rail fence for a cheese press, with stones on the end of a lever for weights; all had changed now; the old shallow pans had given way for the deep setters; the cream would all rise, no matter how deep the setter; was lighter than milk and would find its way to the top. Did not have any of the kind of factories which Mr. Williams had been talking about; had plenty of water and kept their factories clean and neat; if our factories have no spring, wind-mills are used; his plan now, was to submerge in cold water for twelve hours, at which time he could entirely separate the butter particles; temperature at 48°; the separation was plain to the eye; then drew off his milk from beneath, which was the best plan. His neighbor, Mr. Wattles, used a patent cooler; sold his butter as high as any factory; churned only the cream; milk did not sour at this degree of cold; thought that every dairyman should manufacture his own butter, and save the five cents we are now compelled to pay.

H. W. Mead inquired what it would cost per pound to manufacture for a dairy of forty cows ?

H. C. Mead: Did not know exactly; thought two and one-half cents; he had taken to a factory; could churn in the same time he was going to factory.

Wilcox inquired as to the sediment which would settle in the cooler ?

H. C. Mead said one pint left in the bottom would dispose of it all, and not mix with the cream.

H. W. MEAD: This price looks very low; had made cheese for thirty-five years, and had sold for four cents per pound and done well; he now run two factories; made butter and cheese, but this price seemed very low.

PROF. HALL: Had also used the Cooley cooler; could get all the cream in ten hours. Could not say as to the keeping qualities; iced butter would not keep; he made four trials, but the result was not entirely satisfactory; his apparatus was not exactly perfect; one such experiment will not do; as the temperature of water, coloring matter or some little thing might not be exactly right; could, by forcing, get all the cream in eight hours. Had also tried Hardin's plan; needs no air; also stops decay; Hardin's is a refrigerator at 50°, when warm; also tried airing the milk; could see no difference; set some in the dark and some in the light; could see no difference.

MR. WATTLES said: As to the Cooley plan; after he got his apparatus running, his wife had nothing to do; no pans to wash, or churns to scald, or milk to skim; he had rather churn than take his milk to the factory; once cooled the labor is done.

A member called for MR. BOIES' plan of cooling:

MR. BOIES said he cooled by an air duct; air at 52° to 63°; tried to hold as nearly at 60° as possible; in wet weather it took two or three pounds more milk to make a pound of butter than in dry weather; no one plan would do for all places; manipulations must be changed according to circumstances.

The Secretary of the Elgin Board of Trade, read the following, as the transactions of the Board from December 12th, 1876, to December 11th, 1877:

Pounds of cheese sold	6,636,386
Boxes of cheese sold	157,421
Pounds of butter sold	1,174,388
Total in dollars and cents	$1,059,085.05

The highest price paid for cheese during this period was thirteen cents; the lowest price was seven cents. The highest price paid for butter was thirty-six cents, and the lowest was twenty-two cents. The average daily sales for the forty-two weeks, was $29,975. The above figures, of course, do not include the amounts sold at private sales in this vicinity, which would nearly if not quite double these figures.

The question here came up as to whether the Secretary of the Association ought to be paid for his services or not; when, after some discussion, it was voted unanimously that for the ensuing year, that the Secretary be paid fifty dollars for his services.

On motion the Association now adjourned to meet in this city on the second Tuesday in December, 1878.

Upon the subject of "Compensation for making Butter and Cheese," I. H. Wanzer furnished the following paper, which was received too late to come under its appropriate head :

PAPER FROM MR. I. H. WANZER.

"How much per pound is a fair compensation for making cheese, including necessary furnishings and boxes; also how much additional for marketing?"

Are questions proper to be asked in this place, as they will have a tendency to settle the differences of opinion that have existed between the producers of milk and the manufacturers of cheese.

We are sorry that the question of how much it costs to produce a gallon of milk and market it, is not included in your programme. But we presume that not one farmer in ten could answer the question, and there are too many manufacturers of cheese that plod on year after year without knowing how much it costs to make a pound of cheese. In giving its cost from our standpoint we shall differ somewhat from others who operate in different locations where fuel, salt, labor, &c., may be higher or lower. Our estimate will be upon one hundred pounds, made in a factory with an average capacity of five hundred pounds daily.

Labor for making one hundred pounds of Cheese	60	Cents.
Salt “ “ “ “	4	“
Rennet “ “ “ “	5	“
Annotto “ “ “ “	2	“
Bandage “ “ “ “	6½	“
Grease and scaleboard “ “	4	“
Boxes for one hundred pounds of cheese	35	“
Fuel for making one hundred pounds of cheese	12	“
Interest, wear and tear on cost of factory	16	“
To guarantee goods that may be poor from unavoid'ble cause	10	“
Delivery to depot	4	“
Cost of marketing, collecting and disbursing	50	“
Insurance on building and contents	5	“
Total	$2.13½	

In this estimate there is nothing but the actual cost set down. Should the manufacturer get $2.50 per one hundred pounds, which we believe to be the prevailing price, he has a margin of thirty-six and a half cents, which would amount to $1.82½ per day, or $666.12½ per year.

There are some things in connection with the establishment of factorys for the manufacture of cheese that are usually over looked, which we will mention as justifying the manufacturer in demanding this profit and even more.

First, we mention the precariousness of his investment. He is completely in the hands of the milk producers, his buildings and fixtures are good for nothing without milk. Should war or any other unforseen thing occur that would make grain, beef or sheep raising more profitable, the farmer will turn his attention to that, and the factorymen's investment is gone. Should a railroad pass through the neighborhood, creating (as it has in three or four instances in our own neighborhood,) a more central place for a factory the old one must go down. In many instances competing factorys are built, encouraged by the farmer, that they may get a place nearer by, where they may take their milk, thus cutting off the supply of milk and reducing the old factory so low that his profits are all gone. This was the case with the Sherwin and Webster factory ; it was the same with factory "A" and factory "B," also the Switzer factory, all within five miles of this city. And we think could safely say of the thirty-six factorys that are within ten miles of this city that not more than one-half are paying institutions. And, to speak of the men that have been first and foremost in this business from its first introduction in the west, we don't believe that one out of ten are as well off to-day as they would have been had they have stuck to the business they had left. Too many small factorys are being put up, they can't pay. A factory, in a great measure, is like a hotel, it takes a certain number of guests to pay expenses, and when they get beyond that they make some money. So with a cheese factory. It costs no more to keep five hundred cheese warm than it does one. It costs but ten per cent. more for help to make one thousand pounds of cheese per day than it does five hundred pounds. The factorymen can dispose of, collect for, and disburse, the money for one thousand pounds of cheese per day with the same time and trouble that it would take to dispose of five hundred pounds.

MILK SUPPLY OF FOX RIVER VALLEY.

We are indebted to the Chicago Journal for the following article upon this subject:

The Agricultural department of the general Government should possess and annually publish actual data of this rapidly increasing branch of our national production, but it is mainly left to the detached fragments of news that creep into the press, which are collated by some industrious lover of statistics, and so an approximate statement is finally reached. The constantly increasing demand for improved products of the dairy has stimulated endeavor to its utmost, until American butter and cheese, like American wheat, corn and beef, have become staple articles of export, and European markets are supplied from our Western prairies as well as from the glades of New York. It is not the purpose of this article to give even a good synopsis of the products of the dairy farms in the West. Such a work would require a greater expenditure of time than the writer has at command, but having in possession a few figures, thought it might prove interesting to many of your readers to peruse them.

The item of milk for daily consumption in a city like Chicago is something enormous. This supply must come from the rural districts, and within a limited range, as it is not found desirable to transport the fluid too great a distance. Coming pure from the farms, it might become butter if indulged with too long a ride. The great bulk of the supply for Chicago comes from Cook, DuPage, Kane and McHenry counties, the famous Fox River valley furnishing three-fourths. Throughout these counties are hundreds of splendid farms entirely devoted to dairying, and the milk is either shipped to Chicago per rail or sold to the numerous factories where it is manufactured into butter and cheese.

The milk is brought to Chicago in cans holding an average of eight gallons each, strongly made, the can and contents weighing about eighty pounds.

The milk being thoroughly cooled before it it is placed in the cans, but little of it is injured in transit.

Below is presented the figures of shipments from various towns to Chicage upon three of our railroad lines.

The Chicago & Northwestern railroad is the largest shipper, as its lines run through the heart of the milk district. Mr. Schenck, the freight auditor, kindly furnished the shipments from each station upon his line for the past five years, and the aggregate presented is enormous, showing each year a constant and regular increase.

WISCONSIN DIVISION.

Towns.	Gallons, 1877.	Total in five years.
	280,740	1,380,518
Arlington Heights	373,040	1,895,596
Barrington	23,680	135,624
Canfield	74,640	407,088
Cary	47,280	229,120
Crystal Lake	9,228	52,712
County Line	233,400	1,631,040
Desplaines		232
Park Ridge	88,988	520,684
Palatine	8,000	26,196
Plank Road	150,496	643,640
Ridgefield	65,512	354,120
Woodstock		

GALENA DIVISION.

Towns.	Gallons, 1877.	Total in five years.
	444,000	2,301,920
Algonquin	86,000	294,240
Blackberry	21,960	182,833
Clintonville		408
Creston	989,760	4,983,376
Dundee	21,056	206,536
Elgin	52,400	380,000
Elmhurst		7,848
Geneva	486,640	2,543,332
Gilberts	150,800	586,656
Huntley		26,616
Junction	12,080	17,520
Kishwaukee	74,560	211,568
La Fox		1,920
Lodi	70,688	401,104
Lombard	28,400	93,352
Maywood	10,800	40,728
Wheaton	19,576	109,528
Winfield	98,800	760.100
Wayne		
Total	3,987,324	20,698,094

A reference to the above table will show that Dundee and Algonquin have in five years furnished nearly one-third of the milk to Chicago by the Chicago & Northwestern railroad, and why the milk from those towns should be distributed under the title of "Elgin Dairy," is one of the mysteries. Elgin ships but little milk, most of the product of that locality being required by the Condensing Company and the several butter and cheese factories. The scheme is a cheap steal upon communities which deserve credit and are entitled to it.

Mr. Henry Starring, general baggage agent of the Chicago & Burlington railroad furnishes the following table of receipts of milk upon that route for the year 1877:

Towns.	Gallons.
Bristol	912
Downer's Grove	34,792
Fox Station	8,344
Hinsdale	47,872
Lacton	87,968
Lisle	257,560
Montgomery	16,941
Naperville	98,736
Oswego	5,904
Riverside	38,424
West Lyons	169,560
Western Springs	47,672
Yorkville	10,552
Total	825,240

Mr. George H. Daniels, general passenger agent of the Chicago & Pacific railroad, reports that road as bringing to Chicago in the year 1877 the following amounts:

Towns.	Gallons.
Bensenville	280,432
Bartlett	100,152
Dumser	86,200
Elgin	432
Hampshire	103,600
Hammonds	200
Itasca	17,200
Manheim	67,600
Meacham	59,336
Ontarioville	128,800
Pingree Grove	123.904
Roselle	63,344
Spaulding	88,872
Salt Creek	22,840
Starks	61,080
Total	1,204,312

The cooling beverage known as buttermilk "came to town" upon that road to an extent of 45,120 gallons.

This represents the shipments, upon the three leading roads, of milk to and

the city during the year. Of course, much more is received upon various roads, but the writer has not the figures at command.

Throughout the country from whence the above supplies are drawn are located numerous cheese factories, which receive and work up a still greater amount of lacteal fluid. Twenty-five years ago this trade was unknown to the West. With the present ratio, what will it become in another quarter of a century?

In conclusion, we present a few figures and detached statements, such as were readily attainable, in reference to the milk business of the Fox river valley.

The Illinois Condensing Factory, located in Elgin and managed by Lee Borden, Esq., last year used 1,045,705 gallons of milk, giving employment to seventy-two persons, and paying out a great deal of money to the farmers. The works are on a grand scale, and a source of regular profit. Fourteen thousand cans are made in the building each day and filled with condensed milk and *sold.*

Many factorymen are diffident about furnishing data, or it would have been a pleasure to have presented a valuable table of the dairy products of the above named four counties for the year 1877. It represents a vast capital, untiring industry and skill. The dairymen as a class are becoming wealthy, and richly deserve the rewards they receive, as you will scarcely find in the country an equal number of as capable, intelligent and keen business men as in the dairy district of Illinois.

The transactions of the Elgin Board of Trade, which operates solely in dairy products, during the past year were as follows:

Pounds of cheese sold, 6,673,386; pounds of butter sold, 1,174,385.

Cheese ranged from seven to thirteen cents per pound, and butter from twenty-two to thirty-six cents.

The average sales of each meeting were $29,975.83¼.

In connection with the above we give the following figures, as to totals in pounds, of the dairy product of the United States, which, when fairly considered, are enormous, and, we may add, constantly upon the increase: The annual product of cheese in the United States for the year of 1877 was 300,000,000 pounds, or about 1,000,000 pounds for each working day of the year. Of this product 110,000,000 pounds was marketed abroad. The butter made during the same period is estimated at 800,000,000 pounds.

PROCEEDINGS

OF THE

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION,

AT ITS

FIFTH ANNUAL MEETING,

HELD AT THE CITY OF

ELGIN, ILL., DECEMBER 10, 11 AND 12, 1878.

AGRICULTURAL
EXPERIMENT STATION.
JAN 1890
UNIVERSITY OF ILLINOIS.

Published by Direction of the Association.

ELGIN, ILL.:
DAILY LEADER STEAM PRINTING AND PUBLISHING HOUSE.
1879.

Officers of the Association

FOR 1879.

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N. ELDRED, GILMAN, ILL.

The sixth and next annual meeting will be held at Marengo, Illinois, Tuesday, Wednesday and Thursday, Dec. 9, 10 and 11, 1879.

~~G. A. 1650~~

MEMBERS

OF THE

ILLINOIS STATE DAIRYMEN'S ASSOCIATION

FOR 1879.

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D. W. Curtis Sec'y Wis Dairy Association Fort Atkinson
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" " "

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Doct Dewey [illegible] Elgin
[illegible] Pleff - - Plainview Minn
[illegible] - Topeka - Kans
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[illegible] Faulkner & Co.
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[illegible] & Dewey San Francisco Cal.
Higgins --- West Liverpool England

ILLINOIS
STATE DAIRYMEN'S ASSOCIATION.

FIFTH ANNUAL MEETING,

HELD AT ELGIN, ILLS., DECEMBER 10, 11, AND 12, 1878.

ELGIN, DEC. 10, 1878,
2 O'CLOCK A. M.

Convention called to order at 2 p. m., with President TEFFT in the chair; when after some preliminary remarks, relative to the dairy interests, the president read the following address:

DR. TEFFT'S ADDRESS.

FELLOW CITIZENS, DAIRYMEN OF ILLINOIS:—Universal custom has made it incumbent upon the presiding officer of gatherings like this to deliver an opening address, regardless of his opinion or qualification to meet such an emergency.

Then, to add to our embarrassment on this occasion, the executive committee of this association have gone on and parceled out to gentlemen the available topics for discussion from which a well-directed talk could be made, and left for us the only chance to direct our thoughts between wind and water, without the liberty of touching either.

You will please permit us to say that we are happy to meet you here to-day on this occasion. and in behalf of the dairymen of this vicinity you will please allow us to extend to you, one and all, a hearty welcome, hoping and trusting as we do that your sojourn with us will result in good to all.

The time allotted unto man for his abode on this earth is entirely too short for him to commence as our first parents did, at the beginning of the world, and study up, step by step, the various improvements down to the present day in farming generally, and dairying in particular. Therefore men are wont to learn the experience of others through the press or by personal associations with their fellow man. Taking a survey of our country generally, we find those agriculturalists or dairymen who are most in the habit of associating themselves with their fellow man, far better informed in that which pertains to a thorough knowledge of agricultural pursuits in their various forms, than those who choose to isolate themselves almost entirely from their social relations with their fellow co-laborer.

Dairying serves to improve and elevate the mind of those who are engaged in its pursuits, on account of the daily intercourse which necessarily belongs to this branch of farming as now carried on in this section of the state.

The dairymen, together with those engaged in other branches of agricultural pursuits, hold the most important position of any class in this country. We as a people can far better dispense with all others than with this class.

Yet we see many of the young people of the farm rushing into the village or city and leaving the farm labor to be performed by hirelings (who usually have but little interest other than to pass the time and take their money and depart) or by their aged parents. The result of this in many cases is, the farm is neglected, contingent expenses arise, to meet which the farm has to be mortgaged, and sooner or later, should this state of things continue, will be swallowed up by the increasing dues and eventually go into the hands of the capitalist. In this we are only following in the footsteps of our illustrious cousins in England, who have allowed 10,207 capitalists to own about two-thirds of all the realty in that country.

We seriously question whether the God of nature ever made or man ever invented, a higher or better calling for the young, active person, male or female, than that of the honest farmer or dairyman's life.

It serves to more fully develop the muscular system than all other professions put together (if we except the mechanical), and thereby lays the foundation for health, beauty and future happiness. In looking over our criminal docket we find but rarely the name of the farmer or dairyman there; visit our penitentiaries and the ruddy face of the farmer is scarcely ever found there. Turn your eye to the hangman's gibbet, but not to find the dairyman or farmer there; for they much prefer to stretch hemp by hand or horse power than by that finer attachment to the cervical portion of their bodies. Look at us, located as we are in the valley of the great Father of Waters, in a country rich in the component parts of that which goes to produce and sustain plant life, perhaps the richest in the known world—if we are to believe the report of Mr. Cobden, an English gentleman who visited this state at or about the time the Illinois Central railroad was being chartered and built, and who made or caused to be made a careful chemical analysis of specimens of the soil from various parts of the state. His report to his fellow-countrymen (if our memory serves us) was, that the soil of Illinois which he examined, contained more of the principle necessary to produce and sustain vegetable life than that of the valley of the Nile, which has long been considered the richest in the known world. English capitalists, believing his statement to be true, eagerly sought the stock of this railroad, and it was soon built after the charter was obtained.

We now see how fully time has verified Mr. Cobden's statement made many years ago, of the richness of our soil, by the amount of actual productions of the state, the marketing of which has become a serious desideratum with the farmer at the present time.

It would appear advisable that the farmer should condense the products of the farm as much as possible, before sending the same forward, as he thereby reduces the amount to be paid for freight.

It costs, at present rate, about one-eighth of a crop of wheat to freight it from Chicago to New York. In flour it would cost less, besides having bran and shorts to feed stock. Corn costs nearly one-third of the crop to freight it as above, but in starch, glucose or glucose syrup, would cost less; also if put into pork or beef, but would cost very much less if fed to cows and put into butter and cheese. Butter costing only one-thirty-sixth and cheese about one-seventeenth part of the product to freight as above.

We estimate that the production of butter in the United States the present year, will reach in round numbers about 653,000,000 pounds. Of this amount, the people of this country will undoubtedly consume about 630,000,000, and we shall probably export about 23,000,000.

We also estimate the production of cheese to reach in round numbers about 315,000,000 pounds. Of this amount the United States will consume about 180,000,000, and we shall export about 135,000,000 pounds.

England imported in 1875, 181,418,496 pounds of butter, at a cost of 24 cents 9 1-10 mills per pound. Of this amount the United States furnished only 6,360,827 pounds, which was sold in that country for 23 cents 6 9-10 mills per pound, being about 1 1-3 cents less than butter brought from other nations imported the same year. The largest importations in that year were from Germany, Holland, Denmark and France. The home production the same year was estimated fully equal to the whole importation. This holding true, the consumption of butter in England for 1875 would be a fraction over 14½ pounds per head for the entire population. The importation of cheese into England in 1875 was 182,158,256 pounds. Of this amount this country furnished 101,010,853 pounds; being considerably more than half of the amount imported.

This importation, large as it may appear, is claimed by the writer in the Encyclopædia Britannica to be but a small part of what is actually consumed by the people of that country. The amount imported as stated above, would give to every man, woman and child of England, about seven and a half pounds per annum. This would be very nearly twice the amount used per capita in this country.

Our exportation of butter and cheese being almost entirely to England, perhaps it may not be amiss for us to take a general survey of her financial prospects for the future, as well as her home prospects for a continuation in the production of dairy products. Her imports in 1876 over all exports amounted to about $873,000,000. The present year they must much exceed that of 1876. Should this state of things continue in the future it will only be a matter of time when her resources will become exhausted, as no people or country—however rich they may be—can long continue to live, financially, with a heavy annual balance of trade against them.

The census returns of England and Wales for 1861, show that 1,833,652 persons were engaged in agricultural pursuits in that year, and in 1871 the number had decreased to 1,447,481, a dropping out of 386,171 persons from this pursuit in ten years. Nor is this all. The decrease of cattle for the three years ending in 1877 was 374,686 head. This shows a large falling off; but shall we wonder at it when we come to know that the average estimated annual rental value of the whole lands of the country is given at fifteen dollars and four cents per acre! Now the question is, can English dairymen afford to pay the above rental price of land and continue in the dairy business, so long as we are allowed to put our dairy goods upon their market for only about one cent per pound additional cost to their value in our markets? We anticipate the answer that may be made right here that our cheese is not as good as their home manufactured. We can but admit the fact—for it is without doubt a fact—that within the last two or three years we have sent them much poor butter and cheese.

It is also a fact that we have sent them much that will compare favorably with their home make or other importations. In verification of this statement as to the richness of our own cheese, compared with other brands found in the English market, you will please allow us to give an analysis of some six different brands of cheese reported in the Encyclopædia Britannica, a work of English production, which should be perfectly reliable in statistics and facts given so far as that country is concerned. Therefore we quote from it the following:

ANALYSIS.

BRAND.	Water.	Caseine.	Fat.	Milk Sugar.	Asht. Salt.
Stilton (Supposed to be night's cream to morning's milk)	20.27	33.45	43.98	....	2.20
Double Gloucester	33.41	27.75	32.69	2.23	3.92
Cheddar, full cream	30.32	28.18	35.53	1.66	4.31
American full cream	27.29	25.87	35.41	6.21	5.22
Parmesan (Skimmed)	27.56	44.08	15.95	6.69	5.72
Neufchatel (Reported wholly cream cheese	36.58	8.00	40.71	15.80	0.51

It is much to be regretted that the different markets which we select to place our butter require so much difference in make. Butter salted for American consumption would hardly be tolerated in the English market.

Cheese made for the Southern trade requires to be flat or thin, while a flat cheese is not wanted in the English market. Therefore our dairymen are required to make a different sample of each of these staples to suit the market for which it is destined, and if a surplus on one of these markets the other may take it but very reluctantly, if at all.

In our recent visit to New York city we found that market not over-stocked with either prime butter or cheese, while at the same time we found a large accumulation of a poorer quality of both. Perhaps much of this poor article will hardly be sold at any priice—saying nothing about a remunerative price at all.

Now, in our judgment, the continuation in the manufacture of such an article is suicidal to the best interests of the dairymen of this country. In justice to ourselves we should put nothing upon a foreign market but what is strictly prime.

France, with a less acreage of land than Texas, exported to England in 1867 $11,000,000 worth of butter, while the whole United States only exported $1,184,367 worth. While France is largely increasing her export trade in butter to England, we have fell back from $7,234,173 worth in 1865, to only $4,424,616 in 1867. No doubt there is a cause for this large dropping off with us, and it behooves us to look to this matter with an eye singly to its importance.

On motion of C. C. **Buell** it was voted to accept the president's address, and that the same be printed in the proceedings.

It was now voted to take up the topics as arranged in the programme, and proceed to their discussion.

Topic No. 1—"Grasses; the best varieties as adapted to our soil and climate"—was taken up, when the following paper by W. J. **Burdick**, of Whitewater, Wis., was read:

W. J. BURDICK'S PAPER.

"Improvement of Grasses and Grass Land by the System of Surface-culture."

The value of good drainage cannot be overestimated in promoting the health, wealth, happiness and prosperity of mankind. In the physical organization of the earth those means were not overlooked by its Divine Author, in external and internal formation, whereby man can improve it to suit his peculiar views and interests. Hence the success of the improvement of grass land will depend upon the degree of its drainage.

One of the most formidable obstructions to securing good drainage is mill-dams, located on the natural base-line, which cause serious damage to agricultural interests in their locality. In our personal examination of grass land, we have seen thousands of acres of good agricultural land that in its present condition is almost entirely worthless, caused by the check of natural drainage. In the discussion of this topic we shall assume the position that good drainage is the first requisite, in agricultural pursuits, to secure success. The first important work in the improvement of grass lands is to secure good drainage. Hence, to know where to locate drains is a question for careful study and close examination, to secure the best results for the least expense. To secure good drainage, it is very important to obtain a good outfall to the base-line, which will greatly increase the value of the cross-sectional drains. We are aware of the fact that we cannot give a general formula how to drain all classes of land by the same class of material, as the surface of the land is very diversified in its formation, varying from the bluff-rolling, to almost level plains. We would recommend the V-formed open drains as being superior to those of other forms. The V form will make a stronger bank, also the particles of alluvium will not form at bottom of the ditch, because it will increase the velocity of the volume of water flowing through the ditch. The size or dimensions of a drain will depend upon the volume of water you wish it to convey, and also the condition of the surface of the land that you wish to drain. Hence these two conditions will require a careful examination before locating a drain.

After securing good drainage, our next work will be in preparing the soil for the introduction of the grass seed. It is a well established fact that we are a strong exponent of the system of surface-culture for the improvement of grass lands, in all of the various soils and conditions of the surface. I am well aware of the fact that I am contending with a time-honored institution—the use of the plow in the improvement of grass land—but nevertheless we are willing to submit our experience in this class of work, and also the specimens of grasses grown under our supervision, for the inspection of those present. We will note a few of the many reasons why we believe the system of surface-culture of grass land to be superior to the use of the plow, to-wit: That we are obeying nature's law, in this system of work, in preparing the soil to receive the grass seed. This position is demonstrated in the biblical history of grass, as we learn there the agricultural implements were very rude in their construction, and meant to perform the work required of them to do in preparing soils to receive the different varieties of seed, which was only surface work. Yet what a luxuriant growth they obtained!

We will now pass over the intervening space of time, to more recent date in the history of the cultivation of grass by the system of surface-culture. Look at its history in England, Holland, Germany, Scotland, and other progressive countries of Europe! Land that has not been plowed during the past 200 years, the rental value increasing in proportion to its age. Even in many of the New England States, grass land that the virgin soil has never been broken by the plow produces the very richest quality of grasses grown in these states.

We will now notice our experience in the improvement of grass land in the North-West. In the year 1853 the writer located near the city of Oshkosh, Wis. Heard the general complaint about the growing of tame grasses, and it was an admitted fact that Wisconsin was never designed to become a dairy state of any importance, or even the respected state of Illinois. It is wonderful to contemplate the change that has taken place since that period to this time, relating to the dairy interest, of which you are all informed as to its progress. We know by experience that the looser we make the soil with the plow we increase its capacity to receive heat, which will aid rapid evaporation of moisture, so very essential to promote a strong growth of vegetation, especially that of grass, which was one of the principal causes in the loss of the young seeding in the early settlement of the North-West. Again, another reason for the loss was this: Chemical analysis of wheat and Timothy hay shows that they require about the same elements from the soil to sustain a vigorous growth. Here the farmer was disappointed in the unsatisfactory growth of his favorite grass, which was timothy. The writer has a thorough agricultural education, one naturally adapted to the growing of grasses. Here on the old homestead was my instruction in the system of surface-culture in the improvement of grass lands. At the time of writing there is grass land that has never been broken with plow, upon the old farm, yielding a very generous supply of grass, very good in quality. About eight years ago was commenced the work of improving the grass land in the North-West, with the view of securing a smoother surface for the working of machinery requisite in securing a crop of hay. Our work was slow and expensive. Only a few men could afford the expense, as the cost ranged from $5.50 to $10 per acre for the labor and other expenses added thereto.

After we had leveled the surface of the land, our attention was called to obtain the variety of grasses adapted to the various conditions of the soils.

Allow me to introduce specimen grasses, grown on all conditions of soil of the North-West, also by the system of surface-culture. I will mention a few of the many varieties of grasses that are successfully grown in the North-West. I shall mention all of the English names that I can apply to them: Timothy, red-top, bent-top, white or brown top, orchard, foul meadow, meadow fescue, rough meadow, sheep fescue, meadow oat grass, Italian rye grass, floating fox tail, sweet-scented vernal grass, Kentucky blue grass, spear grass, blue grass, eragrostis, etc.

Among the family of clover we have the following list: Alsike, common June, alfalfa, mammoth Italian, white and crimson.

All of the grasses that I have mentioned are adapted to the soils of the states of Wisconsin and Illinois, if they were introduced and cultivated. From this list we select the combination of grass seed suitable for all class of soils, as we are seeding lands by the system used in England, with a large variety of grass in mixture—this has often been explained in previous writings. Since one year ago last June I have been located in Craw Fish Valley, engaged in the work of superintending the improvement of grass lands with the latest improved machines, of which I will submit the following report: My first client, C J. Millard, manager of the Rock Lake creamery, located about two miles south of the village of Lake Mills. Cost of labor, $1.85 per acre. Land very rough in many parts. Varieties of grass and seed used—timothy, red-top, F. M. clover, sown in the spring. My next client was H. C. Drake, proprietor of the Drake cheese factory. The cost of labor was less than the work for Millard. The cost of seed the same; also the same combination—Alsike and red clover, sown in the spring. My next was Messrs. Wm. and Geo. Everson (patrons of the Rock Lake creamery.) Cost of labor about $1.50 per acre; cost of seed the same as Drake's, also same combination. I was very busily engaged in this class of work till about the first of December, cultivating and seeding several hundred acres of grass land. I wish to notice the result of the work, in the yield of grass those parcels of land produced, also the value of good draining. The young seeding of Mr. Drake's meadow was very light; caused by excessive moisture in the soil, produced by the mill-dam across the Craw Fish river, which is causing very serious damage to a large tract of excellent agricultural lands. This meadow of Mr. Drake's has been cultivated and seeded to tame grass. I will say that I seeded about nine acres of Hungarian stubble land, and cut about two tons per acre the first mowing, on the farm of Drake's. I have a sample of the grass grown on that thirty-three acres, which I wish to call special attention to the rapid development of this seeding, caused by good drainage,as the soil on the Everson lot was considered to be inferior to Drake's lot. Hence here is a proposition demonstrated, that the growth of cultivated grasses will depend upon the condition of the drainage of the soil, as the yield of hay on Messrs. Everson's was about one and one-half tons per acre, while on Drake's it was but about three-fourths of a ton per acre. Again, the thickness of the sward will be in proportion to the dryness of the soil.

I am pleased to report to your respected secretary that we have meadow land that was cultivated and reseeded under our personal supervision that is yielding three tons of good, nutricious hay per acre ; also pastures that are producing good grass in sufficient quantities to supply all the feed necessary for neat stock, at the rate of one acre per head, through the feeding season. Those pasture lands are reseeded with a large variety of grass seed, adapted to suit the condition of the soil. We find the first stratum to be nature's combination, as it has received the grasses from the rains and also from decayed vegetation, which it has utilized to promote a rapid growth, as is demonstrated by the specimen in our collection.

I object to the use of the plow, as it destroys many valuable varieties of grasses that are not reseeded, which greatly increase the value of these lands in promoting the interests of the dairyman and stock-grower. Again, when the low grass land has been broken with the plow, it is very uncertain when you will re-establish another sod of any strength and vigor, as the grass will yearly decrease until it is entirely gone and its place is taken by obnoxious weeds, which is very often demonstrated in various sections of the North-west. When we introduce the cultivated grasses into the soil of the native grass land by the system of surface-culture, the young plant has the protection of a portion of the native grass until it gains sufficient growth to withstand the changing influence of the atmosphere to which it is exposed. Again, when the surface of the soil is preserved by the system of surface-culture there is a steady decay of the mature grass, and it becomes plant food for the young plant of grass, till they are entirely destroyed by the cultivated ones. Again, I object to the use of the plow; as it is more expensive than by the system of surface-culture with the aid of improved machinery, even if the results were alike, though we claim the preference in favor of the system of surface-culture.

We will now review the second division of this topic with the comparatively and relative value of the grasses in our collection. Those grasses that are adapted for permanent pasture land are those which will reproduce undershoots or blades, at the base of the column or stem, when cropped off. With Kentucky blue grass, or June grass, red-top, orchard, meadow fescue, white top, pod annie, pod compspa or blue grass, sheep fescue, eragrostis peclurica hordim jubatim, Italian rye grass, sweet-scented vernal grass, foul meadow—all of the above-mentioned varieties are grown in the states of Wisconsin and Illinois, therefore they are acclimated to the condition of the soil and climate.

For upland pasture the orchard grass will produce the largest per cent. of feed in a given time. I have known it to grow at the rate of an inch to every twenty-four hours, for several weeks. This grass is a great favorite with the men who have tested its values, in our section of the state. The meadow fescue is a very valuable grass, and is well adapted to the upland, also to the lowlands; if they are well drained. This grass does not mature as soon as the orchard. My specimen is from eight first seedings. The sheep fescue is very much like meadow fescue in its growth. The Italian rye grass is doing very well in our vicinity, which can be seen by the specimen we have in our collection. Agroslus alba, or white top, is a very valuable variety of grass, which grows quite extensively in our lowlands, which produces a large yield of feed much sought after by all kinds of stock. The foul meadow grass cannot be too highly prized for the lowlands. This has become very popular within the past few years, as it is giving universal satisfaction to all who have introduced it into their lands. It flourishes as well on quite moist land, and yields often eight tons per acre. The past fall I have cultivated and reseeded one hundred acres of lowland for A. R. Earl, Esq., one of the farmers in the town of Astalon, Jefferson county. Used a strong proportion of the foul meadow in the combination of grass seed; also mixed with the combination of grass seed about sixty bushels of dry, unbleached ashes. Demand for this valuable grass seed is very rapidly increasing each year. All of the varieties of grass that we have named are adapted for the dairy stock-grower's farm.

For meadow seeding I would change the varieties in the combination, selecting those that mature at the same time. I would recommend the cultivation and reseeding on old meadow lots in the months of August and September,to secure a good yield the following season. I would use a prime dressing of a prime compost manure while cultivating the soil, thereby thoroughly mixing them together. Then sow the combination of grass seed and harrow lightly with a smoothing harrow. I am now referring to upland meadows. Lowland meadow I cultivate soon as the grass is mown, even in the month of July, but do not sow any grass seed until about the 20th of August. Sow seed until the 13th of October. Continue the work of cultivation until there is a low temperature, so that the seed will not germinate ; then resume the sowing of the grass seed and let it freeze with the soil and grow in the following spring.

Pasture lots on upland I cultivate soon as the frost is out of the ground in the spring of the year ; reseed and hold it as a reserve lot until about the 10th of June, when it will be in a splendid condition to use, producing feed the balance of the season without injury to the young seeding. Lowland pasture lots I cultivate and seed in the fall of the year, mowing the first two crops of hay ; thus it will become a very strong sod, so the feeding of stock will not injure it. In relation to the quantity of grass seed sown per acre, that will depend upon the condition of the soil, also the variety. English authority says that when a lot of land is well seeded, each square foot of land produces one thousand one hundred healthy grass plants. I am using thirty-six to forty quarts of mixed seed per acre, with good results. American seeding will average about one hundred and seventy-five plants per square foot. I observe that when I use a heavy seeding I am not annoyed with a strong growth of obnoxious weeds, and also will have an improved sod on the surface of the land which has been cultivated.

I will now state that all varieties do not mature at the same time, as perchance there are some persons present that would claim the grasses were very much crowded while they were growing. The combination is formed by mixing the earlier and later varieties together, which will cause a steady growth of grass through the entire season, thus affording a generous supply of feed for the use of all classes of stock.

I have often been asked this question : " What length of time will those lands remain as you leave them, when they are cultivated?" also, "What will be the condition of the grass a few years hence?" I will answer the first question by saying that will depend upon the way in which they are used. If the stock is allowed to run over the pasture lots when the soil is quite wet it may produce roughness on the surface, but generally they will remain smooth. In relation to the last question, that will also depend upon how they are cared for. Over-feeding on grass land is very injurious to the longevity of grass, especially on meadow lands. I believe if the farmer would not allow stock to feed from his meadow land on any condition whatever that it would increase the yield of grass 25 per cent. When the first blades form in the early part of spring they are very essential in promoting the growth of the later-growing blades, and when they are cropped by the feeding of stock, the effect is as injurious in retarding the growth of the plant as though it had been severely frozen, which will cause a light yield of grass.

Again, I would recommend early cutting of grass, to maintain a vigorous growth, as in that condition the plant has stronger vitality to nourish the forthcoming blades. This position is demonstrated in all of the early-mown meadows, compared to those cut later in the season. Look at the beautiful rich dark green color of the early-mown blades; what a giant-like appearance by the side of the poor, pale, feeble look of those later cut. The timothy plant is very peculiar in its growth, and being a bulb plant, it is naturally adapted to a dry soil, which can be seen by the various specimens of the plant in our collection of grasses. The bulb is nature's store-house of moisture from which the column draws a supply, increasing its demands until it is fully matured, leaving the roots of the plant very weak in their vitality, which will cause a premature decay. Hence the timothy plant was designed by nature for dry soils and early clipping to secure a strong and vigorous growth. I would not recommend the sowing of timothy on low, moist land, as this retains a greater degree of moisture through the hours of night, and when the scorching rays of the sun come in contact with excessive moisture on column it will cause the fungus on roots, which greatly decreases its nutritious value for winter feed. Hence here is a serious mistake with many in sowing timothy on lowland meadow as the base of their seeding, for there are other varieties of grasses that will grow most luxuriantly in that class of soil and withstand the attack of the fungus. Among those varieties foul meadow is the most prominent in maintaining its deep green color through the entire season of its growth. Also meadow fescue and orchard grasses are not easily affected by excessive moisture of the soil. I am well satisfied that timothy is far more superior as a pasture grass than for hay, as it is No. 7 in the grade list of grasses for its comparative value. And again, timothy will lose about 55 or 60 per cent. in curing, while the orchard will lose only 29 per cent., meadow fescue 31 per cent., foul meadow 44, rough meadow 31, and red-top 48 per cent.

I wish to call the attention of dairymen to this fact: that timothy is not so valuable a grass as it is accredited to be. I suspect that this position will draw out criticism from those who believe that timothy is superior to all other varieties of grass. In relation to alfalfa, it is thoroughly tested that there are many thousands of acres of land in Wisconsin upon which the alfalfa will become the leading crop for the dairy herd. I have examined prime fields of the alfalfa growing in many sections of the state. The class of soil that is natural for the growth of alfalfa is a rich loam underlaid with clay-mixed sand subsoil, and that stratum resting upon gravel formation, as the alfalfa will root very deep, and this class of soil is thoroughly underdrained in its natural formation. In regard to this clover I will submit the following report: The sapling or mammoth variety is a very valuable clover, if it is properly cultivated, for several reasons, to-wit: 1st. It has a porous root which will withstand the influence of the alternate thawing and freezing which is so disastrous to the common red clover. 2d. It produces a very large amount of feed per acre. I would recommend feeding this clover until about the 10th of June. Then cut a crop of hay or seed. Under this treatment you will produce a very prime quality of hay, as the columns will not be coarse, as though it had not been cropped off. 3d. For a fertilizer I would allow it to grow till the blossoms are formed. Then summer fallow the field. Alsike clover is a valuable plant. The alsike is fast becoming a favorite with those that have tested its merit. I have used a large amount of this seed the past two years in the combination of seeds. I use about one pound of seed per acre. I have a specimen of this clover that measures five feet in length. I am using it quite freely in the lowland. It is a very hardy plant,and does not winterkill like common red clover, as it has a fibrous root. I would not sow this seed upon too dry soils, as it dwarfs in its growth. The Italian clover is doing very well in this secton of this state. It has a very soft stem ; is not harsh as the common red clover. I have a specimen that I selected the past summer that measures five feet in length.

Trifutim incarnation, or crimson clover.—I am not entirely satisfied what the result of experiments with this clover will be, as it will require another season to determine its value. The value of the common red clover is too well known to retain it, except it can be cultivated so that it will produce a fibrous root. This result is produced with this system of surface-culture by sowing seed on cultivated sod land. This is the reason why this clover so long retains its strong vitality. I have examined this clover that the seed was sown ten years ago. This clover will grow a root in proportion to the condition of the soil. If the soil is pulverized very fine and deep, it will grow a very long, deep root. I do not sow any grass seed with the cereal grains. I highly cultivate the stubble land if the crop has been secured. Sow the combination of grass seed from the 15th of August until the 15th of September, excepting clover; leave that to be sown the following spring. I have seeded stubble land by this system and cut two tons of hay per acre from it next season. The principal cause of losing young seeding when sown with spring grain is, that it is too tender to withstand the scorching effect of the hot sun when the grain is removed; also the soil is in a very porous condition, as the following experiment has demonstrated, to-wit: When the thermometer indicated 70° atmospheric heat, in clay soil it would indicate 130°, sandy soils 107°, alluvial or black soils 110°. In highly fertilized soils the degree of heat is still higher. Again, I find the degree of heat varies in proportion to the drainage of the soils. On the lowest or cold lands, and on those affected by cold spring water, the vegetation is the latest in growing. Hence, this experiment demonstrates two potent facts, to-wit: 1st, The absolute necessity for good drainage. 2d, The lowland is the most natural soil for the production of grass. Also we have the varieties adapted to these soils, which are giving the very best satisfaction to all the parties that are engaged in the improvement of this class of soils.

In relation to the condition of the lands we are engaged in cultivating, I say that we are prepared to improve all classes of land, from the very rough to the very smooth surface, even the willow-growing land, at a cost less than to subdue them by the system of plowing. Also, we have in our collection eighteen different varieties of grass seed; therefore we are prepared to give formulas of the combinations of grass seeds to suit all conditions and varieties of soil, as we have thoroughly tested these grasses and know their value in comparative and relative forms.

In conclusion I will submit the following proposition for the consideration of those interested in the improvement of grass land, to-wit: That the improvement of the grass land is the first work to insure a higher quality of the dairy product. 2nd, That the value of the products of the cow is in like ratio to the quality and quantity of the food and the care she receives from the herdman. 3d, That the grass lands, when they are properly drained, cultivated and reseeded with a combination of grass seed adapted to the soil, will yield a greater revenue than any other class of land, in ratio to their expense. 4th, That in work of improving the grass land by the system of surface-culture, we promote the growth of many very valuable varieties of grasses, adapted for the use of the dairy herd, which would greatly enhance the value of those lands that are destroyed by the system of plowing, and are not replowed in the reseeding. 5th, In the reseeding of these lands with a combination of grass seed, adapted to suit the different varieties of soils, we increase the yield from 30 per cent. to 200 per cent. per acre.

C. C. **Buell** was a new beginner come here to learn. His farm was composed of a variety of soils, mostly prairie, and of a sandy loam—most too sandy, and was mostly reclaimed from wet soil. His upland produced clover freely; his lowland, Kentucky blue grass, or June Grass, which are one and the same. His upland was all right—he could handle that, but the lowland was what caused him trouble. Cattle would punch it up or " bog it." Had for a year or two put his harrow onto it, and then seeded with red-top and timothy. This year mowed it and got a good crop. Could not say as this plan would do for all lands. Had read much of the writing on the grass question, but thought all statements should be made based upon actual experience or definite knowledge.

E. H. **Seward** said that the question of grasses was at the bottom of our success as dairymen; no dairy region could prosper where good grasses could not be produced. There were a great variety of soils in this state; they must all be treated differently. Often the same eighty needed several kinds of treatment, and as many kinds of seeds. Red-top wants a wet soil. Clover needs a deep soil, as it roots very deep. Much of our lowland was now coming into red-top by a process of natural seeding. More seed should be used, not wait for nature to seed for us. Timothy seems the most natural grass to our soils, and will thrive on any vegetable loam soil—but that it easily winter-kills is a mistake. It is the fall drought which kills it; it is a bulb plant and must have plenty of moisture. Clover is the best, all considered: it yields the most abundantly, will produce more milk than timothy, but not quite as good for pasture as red-top or blue grass. It is a mistake not to try to make our land yield more grass; there is too much loss; we must use more fertilizers. Top dressing is good for grass. Clover not only yields a great profit, but it is in its nature a fertilizer, preparing the way for other crops, especially for oats and corn; we should all raise more—should alternate with our crops. And all should remember that grass was the farmer's "backer."

C. C. BUELL said some recommended muck for a top dressing for grass lands. Some was good, some worthless.

MR. JOHNSON wanted to know as to the expense of making new land by the use of muck. He lived on the prairie, where help at from $15 to $23 per month made it too expensive; could see no profit in it.

C. C. BUELL could not tell as to exact cost or profit of using muck. He knew that to make all the barren places in our farms productive would remove many "eye sores." He believed the wet places should be made dry, and the poor ones productive, regardless of cost.

E. H. Seward thought, as to muck, it might not pay for the first year, but for a term of years it would certainly pay.

J. R. McLean, if not for a bad cold, could "knock the socks" off from Buell and Seward. He did not blame Seward for drawing out his "muck holes," but he did not believe there was any pay in it. Clover and timothy are natural to our soil. We did not as a rule use seed enough. He used to use his thumb and finger to scatter the seed, but now his son runs the farm and he takes a whole handful. Red-top is not fit for anything; cows can't eat it—they would require a new set of teeth each year. Cannot rely upon it in mid-summer; will not stand drought.

D. C. Scofield: How is it for hay?

McLean: It is poor for anything. He knew of one piece of land in the East which had produced hay for 38 years, and when he had last saw the hay it stood as high as his chin—this was natural seeding, of mixed grasses.

D. C. Scofield inquired as to the proper time to cut timothy for hay—whether in the blossom or seed.

McLean did not admit that in the blossom to be the best time; thought a little riper to be the best time.

C. C. Buell inquired if any dairyman had any experience with browse as feed for dairy cows. None had.

E. H. Seward: Had never kept a record of the falling off of tame grasses to a normal condition. This could only be determined by a record for a period of years.

A member asked McLean as to the best time to cut hay to produce the most milk.

McLEAN said his experience was to cut in the dew or milk of the grass, the best time.

C. C. BUELL thought this a very important question, and should be thoroughly discussed, so as to get more light upon it.

SEWARD thought the statement of McLean, that hay should not be cut until the seed had fallen, should not go out to the public; the fact was, timothy had two blooms—first a white, second, a blue bloom—and should be cut in the first bloom, at least for him. Scofield was reminded of an apple: it was good only once, to-day and not to-morrow. If a farmer has 100 acres to cut, he cannot cut it all in a day or two. When must he cut, green or ripe?

SEWARD thought this a common sense question. It could not all be cut in one day, therefore some would be a little too green and some a little too ripe, but the average just right.

A member thought the farmer who had 100 acres of hay, had better have 50 acres of it in corn.

C. H. LARKIN wanted to know about the two blossoms on timothy; did not understand it; thought all plants were allowed only one blossom each year,

SEWARD: It may not be true that timothy has two blossoms. The first might change color; perhaps it did.

A member had lived on the Western Reserve; used small teams, plowed shallow, and raised poor crops. New settlers came in, with large teams, plowed deep, and sowed clover, and were soon raising large crops. Believed clover the cheapest fertilizer the farmer had. If cut early it would

AGRICULTURAL
EXPERIMENT STATION.
1890
UNIVERSITY OF ILLINOIS.

seed itself. As to cutting early or late, he believed McLean's theory correct. It should be really ripe, but for milk it should be cut green.

S. W. KINGSLEY inquired as to the mode of using clover as a fertilizer.

C. H. LARKIN wanted to know which he could do the cheapest, draw manure three-fourths of a mile, or use clover.

O. C. DIGGINS: Would draw the manure. To plow in, was the general mode practiced where clover was used.

W. W. BINGHAM thought to spread on a coat of dry straw and plow in, was as good as a coat of manure. After some further discussion of this question—

No. 2—"Soiling; is it profitable to the dairymen of this state? And to what extent?" was taken up.

W. W. BINGHAM: Could not say much on this question from experience. Had farmed but little. Knew a man who kept sixty cows upon one hundred acres of land by means of soiling. His own plan was to drill in his corn for fodder; used five bushels of seed per acre, and obtained a very large yield of fodder. Also used oats cut green for soiling. Sowed three bushels per acre. Found this to be good feed for soiling. Kept his cows in the stanchions twenty hours out of the twenty-four. Kept twelve cows on six acres of pasture. His farm contained thirty-six acres. Intended to keep twenty cows as soon as his farm was in a little better condition. Raised nine acres of corn. Bought five tons of bran. The remainder of the feed was raised on the farm. Of good milk, twenty-one pounds was sufficient to make a pound of butter.

C. H. LARKIN: Knew nothing about it at all. Had no definite figures to give. His neighbor, Judge Wilcox, had made experiments. Hoped he would be here.

C. C. BUELL had supplemented his pasture by feeding clover. After second growth often fed rye and corn.

C. H. LARKIN: Did you feed it as a matter of necessity or for profit?

BUELL: Fed it for profit.

DR. TEFFT: Said the French farmers made more money than we from their land and dairies. Many only used ten acres; and upon these small tracts, highly cultivated, they supported large families; and even laid up money. But economy, of course, had to be practiced.

MR. JOHNSON: Doubted if fancy farming paid.

On motion of R. P. McGlincy, the Chair appointed E. H. SEWARD, W. W. BINGHAM and BENJ. COX as a financial committee.

On motion, adjourned to meet at 9 a. m. to-morrow morning.

WEDNESDAY, 9 A. M.

Convention called to order as per adjournment, and the discussion of the programme resumed.

Topic No. 3—"The supply and demand of dairy products; and their future market." Upon which question Capt. W. H. Stewart read the following paper:

CAPT. W. H. STEWART'S PAPER.

Without going into statistical details of what the supply is--or the demand, which I suppose is measured by the consumption, since there appears to be quite an accumulation of surplus,—it is sufficient to know that whatever may be the demand, for a long time at least, the supply will be readily forthcoming.

The real question that crowds upon us is, how we may reduce the cost of the supply and increase the demand and consumption. I have no doubt that by a practical adoption of the rule of the "survival of the fittest"—by carefully weeding out from the herd all animals which do not come up to a high and advancing standard, and then, by warm and healthful quarters, generous and appropriate feeding and kind and careful handling, the cost of the raw material may be very much reduced and value increased.

The question has frequently arisen, whether we would not soon get to indulging our American right and custom of riding a good thing to death. And the present stagnation and accumulation seems to excite suspicion that the dreaded time had arrived. Yet I think not, except accidentally. The general pinching financially compels the shortening of sail and running close. When cheese is used as an extra—a luxury—it goes by the board, and the drying up of the million little streamlets, each in itself of no great consequence but in the aggregate works a fearful shrinkage of the main river. For this, as dairymen, we can only wait and hope for the better time coming. While waiting, one thing—which I think is a greater, a more persistent and permanent cause of staying consumption—we may study with profit if it leads to action: Kinds of food generally are a matter of taste. Taste can be educated. Its gratification grows into a habit. Habit makes a necessity, and the necessity makes a permanent, steady demand. The English, especially the poorer classes, are said to be a cheese-eating people. They have been educated to it. Doubtless at first, through hard necessity, to fill an alimentary requirement caused by a want of flesh beyond their reach. But the habit being formed, its gratification has become a necessity. Hence the absorption of the wonderful quantity of cheese that is annually shipped from our growing surplus. Situated as we are, there is little danger of our being forced to the use of cheese for the want of meat, yet the taste can be very much sharpened by tickling the palate and coaxing the frequent and general use by constant satisfaction.

Since the commencement of the factory system of making cheese, the use of it in this country, in this very way, has grown to magnificent proportions. It was evidently a goose that was laying golden eggs. But instead of nuturing and encouraging the goose to increase her laying, I fear many of us have gone for the goose as the old story reads—we have stolen her fat for butter and left the eggs tasteless, worthless, saleless, goldless. For two or three years the manufacture of skim cheese has increased to a sad extent; and what is the outlook?

Just at our sorest pinch, when financial stagnation is pressing us with a heavy hand, our goods are tramps, roving about everywhere begging for a market. A shrug of the shoulders, and the stereotyped phrase of the price current, "Only fine mild cheese at all saleable," and that slow and pulseless, is the polite rejoinder. Shading prices even are received with unmeaning indifference.

Go and interview for a little while the retailers in this city. Say they—"We have been unable to obtain a respectable article of cheese, and a little goes a great way. No one wants it, and it doesn't pay to keep much." And so it is all over. The president of this society and of the Elgin board of trade—where millions of cheese are annually sold—is compelled to import from outside districts cheese for his own consumption that is fit for his table, his board of trade for the sale of skims being unable to furnish it.

The fact is, the home consumption, notwithstanding the low price, has fallen off at least seventy-five per cent., while it ought to have at least twenty-five per cent. increase. This alone would bring to the trade wealth and happiness. More than this, by sending the life-blood of the cheese to the butter-tub, you not only kill the cheese trade but smother the butter trade as well. If with the new year we can with honest money content ourselves, with honest goods as well I can only see fair sailing in the immediate future.

Capt. Stewart further said that oleomargarine was better for butter, than skim cheese, was for cheese. He deprecated the making of skim cheese. It was not fit for use; and should not be tolerated.

John Colett: Was at Quincy a few days since. Saw in a grocery store, a good, full-cream cheese. Asked the grocer where he obtained it. He said, New York. We cannot get good cheese in Illinois. They do not make it. They skim too much.

The Chair said, they do not skim as much in Wisconsin, but find a ready sale for their cheese.

T. McD. Richards: Thought every factory should brand their cheese, as to quality. If skimmed, sell it for just what it was. As long as there was a demand for skim cheese, factorymen would make it. They could make more money by so doing, but if all products could be sold upon their merits, no harm would be done.

E. H. Seward: Thought an inspector might be appointed, to brand cheese, as well as to inspect wheat. A law should be passed to regulate the whole matter. It should be sold for just what it is worth. As it now is, Illinois cheese stands as low as any state in the Union, and is still on the down grade. Wisconsin makes better cheese than we do, and finds a quicker sale. Illinois factorymen skim as long as they can see anything to skim.

R. P. McGlincy: Did not think a law could be passed in Illinois to regulate the matter. Had had experience in this matter. Endeavored to have a bill passed preventing the adulteration of milk; but the average legislator could see no harm in the adulteration of this natural food, and so the bill could not be passed. The dairy business did not receive the attention it ought to. No one paid any attention to it. But as long as the buyer gave within one-half cent as much for "skims" as for full-cream cheese, they would be made.

JOHN COLLETT: Thought the whole thing could be remedied. It was a lack of consumption. Not an over-production. People cannot get what they want, so will have none. If all could be branded, both skims and full-cream, a change would soon be felt.

COL. WILCOX: Wanted to know if the branding system had ever been tried. And with what result. Said the man who made a good plow, a good mower or a good machine of any kind, was not slow to put his name upon it. Why not on cheese as well. It seems to him the only remedy. Every manufacturer of any article for domestic use will not fail to brand his goods. And, not only this, but will have his private trade mark, which in many instances is of great value.

COLLETT said if this could be done, Elgin would support as large a butter and cheese house as any city in the United States. Could keep twelve salesmen constantly employed.

SEWARD: Thought selling on commission should be discouraged.

COLLETT: Dealers did not understand it. They, as a rule, were not judges of dairy goods. They often do not know what they buy or sell.

W. W. Bingham thought dairymen had missed it by trying to make money at the sacrifice of reputation. The factory plan leads to this. All want to make as much money as possible. The dividend plan is wrong. It is quantity they are all striving for, and not quality. The more the factoryman makes the more money he gets. Times are hard; as they improve, prices will also improve.

Wilcox: All was in a lump. Individuality was entirely swallowed up. No person who makes a good article should be ashamed to brand it. He bought his butter from a private dairy. Could not afford to buy creamery butter.

S. N. Wright: Thought the whole matter rested with the dairymen themselves. They should demand full-cream cheese, and compel factorymen to make them. Dairymen should not take a gallon of milk to a factory where skimmed cheese is made. And all should be sold on the board of trade.

Dr. Tefft: Said there was a demand for skim cheese and it would be made.

B. Cox: Had one month's milk made into full-cream cheese. Received 4 cents per gallon for his milk, while he was receiving 4.65 for skims and butter.

Seward thought the factorymen encouraged the making of all butter and skimmed cheese, as the figures showed there was the most money in it for them. The factoryman made six cents and the dairyman lost fourteen cents per 100 ℔s., which is all wrong.

Collett said if the watch factory put their goods upon the market as watches only, they would never have a reputation. But they brand their goods " Elgin Watches," which is a guarantee for their quality. There is honor among business men as well as others, but many are poor judges and do not really know what they handle. If all were branded then the poor judge would know as well as the good judge, just what he was handling. All other goods for domestic use never fail to be branded, as to their merits. Why not cheese as well as soap ?

MR. BARNETT, of Sugar Grove, sold all his cheese for nine cents. Made all full-cream cheese. People came to the factory to get it. Had no trouble in selling all he made.

A member : How about your dividends ?

MR. B : They are not as large as paid by the factories where skim cheese is made.

A member : That tells the story.

MR. BARNETT received milk only once per day. Often it came to the factory sour ; but he never failed to make a good cheese.

This statement was received with some degree of allowance by the dairymen present, who had been taught to believe that when milk was once sour it was impossible to manufacture good cheese from it.

J. R. McLEAN : Said he and other dairymen had devoted nineteen years to learn how to care for and handle milk. He now learned with astonishment that all this time had been worse than wasted, for here comes the information from Sugar Grove, that *sour milk* is as good as sweet milk for cheese making. As to skimmed cheese, he bought some full-cream, took it home, his family would not touch it, but wanted some of that *mild* cheese—which means skimmed. There is no disputing the fact that it would often bring more in the market than full-cream. It is ready to eat as soon as made; not so with full-cream. The trouble is, the supply is too great; it is enormous, amounting to as much as one-half our national debt. Our Canadian neighbors come to Elgin, learn to make skimmed cheese, go home and make and ship to England $8,000,000 worth, and have hardly begun yet. He here read from the Utica *Herald* as to number of cows, exportation etc.

SCOFIELD: Wanted to know the amount of skimmed cheese, in pounds, equal to the cheese which would satisfy an Englishman?

COLLETT: Thought, although cheap, it was in the end an expensive food, as it cost so much for medicine to work it off.

JUDGE WILCOX: Took exception to some of the figures read by McLean, from the Utica *Herald.* They were preposterous and should never be given to the public.

DR. TEFFT: Said those figures were made by J. H. Real, and should be received with great allowance.

On motion topic No. 4 was passed, and

Topic No 5—Was taken up. "What per cent. depreciation is there in keeping up a dairy from all sources?" This eminently practical question seemed to stagger many of the dairymen present, as no sensible answer could be given, only by one who had kept his accounts exactly, and this is what few dairymen do.

S. W. KINGSLEY: Knew the shrinkage was large, but just what per cent. he could not say; but at least twenty-five per cent. Did not keep figures as to the loss or cost.

McLEAN: Said it was a new topic, no one had thought of it before but gone ahead regardless of cost or profit. It should be thoroughly investigated and a definite conclusion arrived at, as the business is a constant drain on both mind and body.

SCOFIELD thought they were not talking to the question—to count capital, interest, etc. We had all better give up our farms; we were making nothing.

S. W. KINGSLEY, in speaking to this question, said the cost of keeping up a dairy was large. Thought that 25 per cent. was not too large. He also digressed, and gave the following as a sure remedy for milk fever in cows: "One pound of common chalk pulverized and mixed with vinegar sufficient to swallow easily."

C. C. BUELL hoped the main question would not be dropped. Was a new beginner in the business. Had not yet made much improvement; had not even built a good barn. Was farming to make money. Kept 40 cows; had 100 head altogether. Stabled all his stock; had four barns or sheds, did not cost $100 each; they were so warm that no frost came inside; would have to renew them once in fifteen years. Could do his work cheaper than the man who had big barns. Could bring his feed to the barn. Expensive buildings were not essential to profitable dairying.

HENRY SHERMAN: How are your sheds made?

BUELL: They are studded with 2x4's, boarded on both sides and filled with tan-bark. Straw roof filled in overhead with straw. This will make as comfortable a stable for cows as though it cost $3,000—it is the true plan.

McLEAN: Was glad to learn how Buell made his sheds, and that some one as well as himself did not run to big barns. To arrive at an exact figure of depreciation one must inventory each year.

JUDGE WILCOX: Was aware that farmers were not in the habit of keeping close accounts. Had given it much thought, and had commenced a system which he believed would give a correct result as to the actual depreciation of the dairy. Would like to hear from the dairymen who had kept such an account. Must take a correct inventory to ascertain how one stands. Wear and tear of tools and machinery must all be included. The farm should have the proper charge for all taken from or put upon it. One large item of expense was generally overlooked; it was by contracting to deliver to a factory a specified amount each month. This often necessitated buying cows at large figures. Hoped to be able next year to give exact figures.

After some further discussion it was voted to appoint a committee of three to carefully investigate and report, at the next annual meeting, what, in their opinion, was the true answer to this question.

THE CHAIR appointed JUDGE WILCOX, C. C. BUELL and W. WING as such committee.

S. N. WRIGHT wanted to know the value of heifers with calves by their sides, as compared with old cows.

Mr. Lambert (Canada): What breed?

E. H. Seward: Grade Durhams come in at from eighteen to twenty months old.

Mr. McRichards here gave all present an invitation to attend the next annual meeting of the Kishwaukee Farmers' Club, to be held at Marengo, Jan. 26, 1879.

On motion, adjourned to meet at 1:30 p. m.

Wednesday, 1:30 p. m.

After the convention assembled the secretary announced that he had received several important communications, from various persons appointed to take part in this meeting. On motion it was voted to dispense with the reading, but that they be printed in the proceedings.

Topic No. 6 was called for, but the parties assigned to open this discussion were absent.

Topic No. 7—"At present prices, does the dairyman, whose milk is manufactured into butter or cheese, or both, at a factory as now generally managed in this state, receive what he ought for his milk? If not, why? And what is the remedy?"

This being one of the most important questions for the dairymen to consider, all present listened with great interest to Judge Wilcox, who spoke to this question as follows. He said:

The points I desire to make in the discussion of this question will be more readily comprehended by first describing, summarily, the factories in general in the northern part of this state, and their proprietorship and management generally.

There are within a circle having Elgin for its center and a radius of fifty miles, probably between sixty and seventy cheese and butter factories. Many of these are inexpensive structures, erected hurriedly without proper regard to their adaptation—either in their surroundings or internal arrangements—to the business. Two men, as partners, are proprietors of seven of these sixty or seventy factories. Two men are severally the proprietors of three each. Four men or firms, are severally the proprietors of two each. Of the remainder no person or firm operates more than one, so far as I have been able to ascertain.

The seven factories of which the two gentlemen are the proprietors are in their location distant from each other—the distance between the two farthest from each other being at least fifty miles. Only one of these gentlemen possesses practical knowledge of butter or cheese making. It is impossible for him to receive the milk, make the butter and cheese, or even to superintend the work in each of these factories. Employes of the firm are necessarily intrusted with the business. He can visit each factory once a week or so and give the employes general directions. The factories of each of the two men who severally operate three factories each are also distant from each other, and though each of these gentlemen is skilled in the business, still the work of receiving the milk and making the butter and cheese is mainly intrusted to their employes.

Of the other factories, I believe it may be affirmed that most of them are under the proprietorship of men engaged in other business, and who are not skilled in the manufacture of butter and cheese, or if skilled, do not make or personally superintend the making of the butter and cheese. The factories generally neither internally nor externally present an attractive appearance, and the employes are far from being models in neatness of attire or person. Patrons of each factory, in numbers from ten to forty, carry their milk in eight-gallon cans to the factory every morning (except in some cases Sunday morning); an employe of the proprietor receives it, weighs (or, when the account is kept in gallons, determines the quantity) and enters the amount in a book. The inspection of the milk, if any occurs, is superficial. The milk is conducted from the funnel through a pipe into a reservoir. An employe puts the cans, one after another, into a box or vat (of a capacity of thirty to forty gallons) containing hot water, scrubs them some with a brush, then holds them over a pipe and lets into them for a moment a jet of steam. This is the cleaning the cans receive. This water generally serves to wash forty to one hundred or more cans.

The milk being taken in, the employes proceed with the work of making from it butter or cheese, or both, as the proprietor of the factory (whose only interest in the milk, is the fixed sum of money which he charges for making, fitting for market and marketing, the butter and cheese produced therefrom) shall direct.

In from ten to fifty days thereafter the proprietor puts the product in the market—sells it on the board of trade at Elgin, or sends it to a commission house in some city to be sold, as his own convenience or interest dictates. Generally, upon the expiration of two months he announces to his patrons a dividend—and, without any explanatory statement, he simply gives each a check for a sum of money.

The prices agreed to be charged for making, boxing and marketing the cheese vary some—ranging generally from two to two and one-half cents per pound, and for butter generally it is five cents per pound. The proprietor of the factory keeps the accounts and figures the dividends. The patrons seldom keep an accurate account of the milk delivered. They do not know the aggregate quantity of milk delivered to the factory each month; neither do they know the aggregate amount of butter or cheese or both made, nor to whom or when or for what price the proprietor of the factory sold the products.

Concerning all of these important matters the dairyman is generally not only ignorant, but is unable easily to ascertain the facts. It is difficult for him to obtain the data by which he could determine whether the products were in quality or quantity sufficient, the price obtained the market value, and the amount retained only the charges agreed upon.

The proprietor's interest is promoted by obtaining all the milk for his factory which, with his facilities, he is able to handle; hence, in the absence of any guarantee of quantity or quality of the products, it is unreasonable to suppose that either he or his employe would contend seriously with any patron about the purity of the milk. No inspection of the premises of patrons is made nor is there any examination into their manner of keeping, feeding and watering their cows, milking their cows, straining and cooling their milk, and caring for their cans.

The naked statement of the management generally of the factories is of itself evidence that the quantity of butter and cheese made was not as large, and the quality not as good, and the price obtained not so high, as might be; and hence, even at the low prices prevailing last summer and fall, the dairymen did not receive what they ought for their milk.

Experience teaches that when the management of a business is confided to hired help success is seldom attained, and the business of manufacturing butter or cheese from milk is no exception to this rule. It is bad enough to intrust one's business to his own hired help, but to intrust it to the hired help of another—as dairymen do—is still more disastrous. To this management of factories generally there are some notable exceptions. These exceptions are generally where all the operations in a factory occur under the eye and helping hand of a skilled proprietor, who appreciates the importance of neatness, care and economy, and of producing excellent commodities—and who therefore endeavors to prevent impure milk being received and to manufacture only first-class goods--and to have all the work done prudently and cleanly.

The dividends reported furnish further evidence that dairymen did not receive what they ought for their milk. The following is a statement of the lowest and highest dividends as reported from a large number of factories, to-wit:

FOR MONTH OF	FOR 100 POUNDS.		EQUIVALENT IN GALLONS.		DIFFERENCE.	
	LOWEST.	HIGHEST.	LOWEST.	HIGHEST.	100 LBS.	GALLON.
May..	43 cts.	60 cts.	3.87 cts.	5.4 cts.	17 cts.	1.53 cts.
June..	32 "	50 "	2.88 "	4.5 "	18 "	1.62 "
July..	45 "	52 "	4.5 "	4.68 "	7 "	.63 "
August..	50 "	72 "	4.5 "	6.48 "	22 "	1.95 "
September..	73 "	92 "	6.57 "	8.28 "	19 "	1.71 "
October..	83 "	100 "	7.47 "	9 "	17 "	1.52 "

In this calulation I suppose a gallon of milk to weigh 9 lbs., which is probably about 4 oz. above the average. Assuming that a patron had fifty cows, yielding per cow per day one and four-fifths gallons of milk, the following calculation would exhibit the difference in his monthly receipts, upon the supposition that he received the lowest instead of highest dividend:

FOR MONTH OF	GALLONS MADE.	LOSS PER GALLON.	DIFFERENCE OR LOSS.
May	2,790	1.53 cents.	$ 42.67
June	2,700	1.62 "	43.7
July	2,790	63 "	17.57
August	2,790	1.98 "	55.24
September	2,700	1.71 "	46.17
October	2.790	1.53 "	42.67
			——$248.06

The total difference in the receipts—that is, loss—for the six months would be $248.06, a heavy item surely to the dairyman.

I desire to call attention particularly to the report of dividends for August, as it seems very instructive. It is as follows:

Gould & Kilbourne, Dundee	65c
" " Algonquin	65
" " Home	72
" " Wayne	72
James Carlisle, South Elgin	72
Wm. H. Hintze, Kirkland	60
Newman & Thompson, Springbrook	61
Dunc. Johnson, three factories	60–62
Coon Creek	57
Boice, four factories	60
Hawthorne Bros	59–60
Mr. Hathaway, Hampshire	55
Barrington	65
D. E. Wood, Huntley	70
North Factory	70
Coral	64
North Aurora Factory	60c
John Anderson, Lodi	50 6-10
Switzer, St. Charles	65
M'Adams, Algonquin	65–70
Spring Lake	70
Barreville	65
Clark's	65
Oatman, Dundee	70
H. A. Bogardus, Batavia	60
Kibling, west of Batavia	60
Potter, LaFox	60
W. D. Turner, Geneva	60
Montgomery	60
Mr. Holloway, Kaneville	50
Naperville	50
Junction	50

It will be observed that factories under the same proprietorship paid unequal dividends—the largest inequality amounting to 7 cents per 100 pounds, that is, 63-100 cents per gallon. Why was this?

Is it unreasonable to suppose that it was because those factories paying the highest dividends received more of the attention of the skilled proprietor than the others? The Home and Wayne factories are nearest to the proprietors' residence.

I think it can safely be affirmed on the one hand, that the factories exhibiting the best results did not make any more or better butter and cheese than could be made from the milk supplied to them, nor obtain any higher than the market price for the goods. And on the other hand, that the factories (which are the most numerous) showing the poorer results, did not get out of the milk all of the good butter and cheese which could be made. The logical conclusion is, that there was bad management or there would not have existed so much difference in results. I am led to believe, from the best data accessible to me, that fully two-thirds of the milk delivered to factories in this state during the months of May, June, July and August, did not bring to the dairymen, on an average, over four cents per gallon. Dairymen must do better than that or quit the business, if they wish to avoid bankruptcy, for milk cannot, without loss, be produced at that price.

Prices, I am aware, were low for good cheese last summer—but were they so depressed as to account for such low dividends? A gallon of pure milk is sufficient, under the most favorable circumstances (and dairymen should carry on, or cause to be carried on, the business under the most favorable circumstances), to make a pound of first-rate, full-milk (or cream, as it is called) cheese. Such cheese could have been sold on the board of trade, during the months of June, July, August and September, at an average of at least eight cents per pound, as I am advised by a gentleman thoroughly conversant with the transactions on the board of trade. The charge for making, boxing and marketing cheese say was 2½ cents per pound; deduct this from 8 cents (the market price) and there is 5½ cents left —that is 5½ cents per gallon for the dairyman for his milk, for the months of May, June, July and August. This is 1½ cents per gallon more than was received for probably two-thirds of the milk furnished the factories during those months. Dairymen need not be told that a difference of 1½ cents per gallon is an important matter to them. A pound of good butter can generally be made from 2½ gallons of pure milk. I am advised that during said months such butter, on the average, could have been sold on the board of trade for 23 cents. Deduct from this 5 cents for making and marketing, and there remains 18 cents; that is 18 cents for 2½ gallons, which is 7⅕ cents per gallon. These calculations, based upon correct data as I think, demonstrate that even at the low prices of last summer dairymen did not realize what they ought for their milk. A just estimate of the loss sustained by them would astonish even the most thoughtful dairyman. Now why this loss?

It may be difficult, if not impossible, to assign the true reasons for it. The main reasons are probably as follows:

1. The milk was defective.

2. The handling and manufacturing it was uneconomical and wasteful.

3. The products were deficient in quantity.

4. The products were deficient in quality.

5. The facilities for caring for and storing the products were insufficient, and hence sales were compulsory and disadvantageous.

6. The prices charged for manufacturing the products were too high.

7. Sending the products to commission houses to be sold, was damaging.

8. Middlemen—to whose fingers some of the proceeds, in passing, always adhere—were to numerous.

I shall not dilate upon these several reasons separately. The brief sketch given of the way and by whom the work at the factories was done will convince dairymen of the soundness of most of these reasons. As to the quantity of the products, in the absence of accurate statistics which might and I think ought to be furnished by the proprietors of factories, no definite knowledge is attainable. It is a matter of grave importance to the dairyman whether 9 or 13 pounds of milk were at the factory used to make a pound of cheese, and whether 22½ or 32 pounds of milk were consumed to make a pound of butter.

My experience, observation and conversation with proprietors of factories leads me to believe that on an average not less than 13 pounds of milk were consumed to make a pound of cheese, and 30 pounds to make a pound of butter. The waste in this particular alone has been large.

In quality the products—particularly cheese—have been notoriously inferior. Skim cheese has been the make generally. This cheese is made from milk divested of the cream, or most of it. To this short-sighted and pernicious practice of making skim cheese I attribute in a large degree the depression in the dairy business. Skim cheese is unfit for human food. It was well calculated to deceive—and has deceived the public; it looked fair and found sales at a price far in advance of its value. Proprietors of factories, commission men, dealers and dairymen made present money unjustly out of it—the latter the least, however. Consumption of this cheese decreased with the increase of knowledge of its demerits, and now it can scarcely be sold except in a market where it is supposed to be good cheese. The damaging financial results do not affect wholly, as it ought, those only who are engaged in manufacturing and selling it; it extends much further, and in its downfall it drags not only good cheese but the whole dairy interest. Unfortunately, like all widespread calamities, the innocent with the guilty suffer. It will require years of faithful well doing in the manufacture of superior cheese to restore the valuable fame which this vicinity enjoyed in the production of cheese, a few years ago, and the prosperity then existing among dairymen.

As to the prices charged, they are the same generally as charged eight or nine years ago. By combination and shrewdness the proprietors of factories have managed to maintain their prices in the face and notwithstanding the heavy decline in the price of butter and cheese, in labor, and in property generally and in the profits of business generally. The proprietor—with less capital employed than any one of his patrons owning his farm and dairy, say 160 acres and 40 cows—probably made more money the past summer and fall than all his patrons out of their dairy business. The prices charged are probably nearly double the fair value of the services rendered.

It is superfluous to adduce any facts or reasons to convince dairymen of this vicinity, particularly those who were engaged in the business previous to the establishment of the board of trade, that it is, as a general rule, unwise to send butter or cheese to commission men to be sold on commission. Experience admonishes all that loss is almost certain to ensue when butter or cheese is sent off to be sold on commission. The goods should be retained in the factory until they are sold. This is one reason why they should be manufactured so they can be kept without injury, and proper storage provided at the factory.

The less middlemen to be paid in the prosecution of any business the better. Dairymen seem to have overlooked this fact. Probably in no other business can so many middlemen be found as in the dairy business. When the butter and cheese of the dairyman are not made separately by himself, but with others at a factory, what is wanted is help—laborers, butter and cheese makers—and not men merely to do the figuring, selling, and receiving the lion's share of the profits. Dairymen are capable of carrying on their own business—transacting all of it, and the sooner they unload all middlemen the easier and faster will be their progress to prosperity.

Now, what is the remedy for the financial infelicity of the dairymen?

For some of the untoward circumstances encompassing them it is likely remedies may be found in the suggestions already made.

The dairy has become an industry of vast magnitude, and it is of the first importance to success, in the present depressed state of business, that the product of the dairy should be as excellent in quality and large in quantity as reasonably practicable, and that these results should be reached as cheaply as practicable.

The first essential thing to this end is pure milk. By this I mean milk that is clean, sweet, drawn from a healthy cow and unadulterated, either by addition (as by adding water to it or other foreign substance) or substraction (as by taking cream off of it or the strippings of the cow). Without such milk it is impossible to make first-rate butter and cheese—such as will command always a sale at the highest market price, and generally a remunerative price. The production of pure milk is wholly within the control of the dairyman, and if impure milk is taken to a factory or made into butter or cheese, the fault is with him and he should bear the censure.

If all dairymen were careful and honest, only such milk would be delivered at a factory. But unfortunately this is not the case. Owing to carelessness or dishonesty, among the ten to forty patrons of every factory some milk that is not pure will be brought; and, under the present system—if system it can be called, it will generally be received and used; and in consequence of its use the whole of the pure milk with which it is mixed is more or less polluted and the product is injured. Such milk should always be rejected. If the proprietor of the factory bought the milk or was responsible, to the extent of their market value, for a reasonable quantity and quality of butter and cheese from it, unquestionably it generally would be rejected. The element of self-interest in such case would be present and incite to close inspection and prompt rejection of impure milk. It would also incite to more care, activity, and economy in every particular, lessen waste and expense, and insure a larger quantity and better quality of products and more remunerative and steadier prices.

If the milk shall hereafter be made up by proprietors of factories—other than the dairymen themselves--dairymen might insist upon its being bought by the proprietors.

If this cannot be accomplished, the plan prevailing to some extent in New York might be adopted. That plan is as follows: Let it be agreed that a pound of first-rate cheese be made for every 9 or 10 pounds of pure milk delivered, and a pound of first-rate butter for every 22½ or 24 pounds of milk delivered. And let the factoryman agree to account to the dairyman for the value (on a particular day of each month or the average of the month) of a pound of such cheese for every 9 or 10 pounds (as agreed) of milk received (less the charge of making, etc.,) or if butter is made, to account for the value (determined in same way as cheese) of a pound of butter for every 22½ or 24 pounds (as may be agreed) of milk received (less the charge of making, etc.) Prohibit the making of skim cheese entirely. It is highly probable that some such arrangement—which would be perfectly fair and just—would achieve beneficient results to dairymen and reward reasonably the proprietors of factories. As the business is managed now, the proprietors assume no responsibility scarcely. If their hired men make a mistake—add too much or too little rennet, heat to too high or low a degree, or otherwise injure a vat of milk, by which loss ensues—neither the proprietors nor the employes sustain, as they ought, the loss. The dairymen usually sustain all the losses, whether from mismanagement, negligence or wilfulness. It is said that every factory has its graveyard, and if these graveyards could talk, a tale would be told disagreeably interesting and instructive to dairymen.

I must not be understood as casting any censure upon, or finding any fault with the proprietors of factories. Business is open to all, and if they have simply availed themselves of opportunlties to make money—without risk or much capital—furnished them by the dairymen, they are entiled to commendation for their penetration and enterprise.

Milk perishes quickly, and to become merchantable, generally, must be converted at once into articles of food less perishable, and this work of converting their milk into saleable commodities is therefore properly the business of the dairymen. It is to their interest that this work shall be done economically, cheaply and excellently, and not until they do it themselves, or see that it is done, need they expect the highest remunerative results. If they are so unwise as to furnish the opportunity, they ought not to complain if clear-headed and energetic merchants step outside of their vocation and engage in the—to them—thriving business of manufacturing butter and cheese out of the milk furnished by the dairymen, at a high, fixed price and of the kind and quality suitable to their interests. Shrewd men not only have the right, but always will, when permitted, seize upon a chance offered to make money, and I admire the proprietors of factories for the genius displayed in their government of dairymen.

Like rulers generally, they have managed to draw good pay, while their subjects (the dairymen) have been gradually approaching impoverishment.

It should not escape the attention of dairymen that the tendency of business, as to sales of butter and cheese, under the guidance of leading men among the enterprising proprietors of factories has been for the last year and a half, to sell on commission, instead of on the board of trade, as formerly. The board of trade was established by dairymen to prevent that sacrifice of their products resulting from sending them away to commission men to sell.

Commission men in vain assayed to thwart,on the start, the success of the board of trade. After it became a success, and they could only get the dairy products by purchasing them on the board, they came and bought them and paid good prices, and the dairymen received their reasonable reward. The commission men, shrewd gentlemen, became members, gradually they obtained control, and, as a result, to-day comparitively few sales are effected upon the board of trade, and thereby loss of their proper profits ensues to the dairymen. Several of the leading proprietors of factories (men who have the selling of immense amounts of butter and cheese belonging to dairymen) are to-day carrying on commission business in Chicago. Unless dairymen lift their voice against it, determinedly, the extinguishment of the board of trade—to them and them only, a most valuable institution—will soon take place. The agencies of dissolution are insidiously at work, and dairymen only are interested in staying them. And, unless they make their power felt to this end, the destruction of the board of trade will be accomplished.

The remedy is for dairymen to insist upon their products being sold on the board of trade, and watch closely all proprietors of factories who are also carrying on a commission business. Dairymen have the power and the right, and it is, it seems to me, of the utmost importance to them to prevent the ruin of the board of trade, and this can only be done by demanding that their products shall be sold thereon, and that they shall not be sent off to be sold on commission. Another fact dairymen should note, and that is, that the Northwestern Dairymen's Association has passed substantially from the control of dairymen and is now in the hands of commission men, proprietors of factories, editors of papers, manufacturers of cheese-boxes, vendors of patent inventions, salt, annatto etc., and merchants engaged in supplying factory fixtures and implements. This fact should be borne in mind by dairymen when reading the suggestions and advice to them found in the annual published proceedings of that association.

Dairymen can hardly escape bankruptcy if they continue in the course they pursued the past season, and are now pursuing. The present system, if the wasteful, expensive and unprofitable manner in which their milk is converted into saleable commodities can be called a system, must be so changed as to produce more remunerative results to the dairymen or else abandoned. It is favorable to the proprietors of factories, who are in the main middlemen, and unfavorable to the dairymen.

The dairymen can, and if changed at all, must change it. If more and better butter and cheese, and for less money, cannot be made from their milk (of course I mean pure milk) by the proprietors of factories, than in the past season, then dairymen will be forced to make up their milk at their several homes, or associate together in proper and convenient numbers and erect factories, employ practical cheese and butter makers and under their own supervision manfacture and sell their own commodities or abandon the business.

It is indispensable to the success of the dairy business now, that only first-class butter and cheese shall be made. Such goods can always be sold at home, they are ever in demand and sought after, purchasers will hunt for them and come for them and pay a reasonable price for them. Such goods, too, can be kept and hence facilities for keeping them, when necessary, should be provided. To make such goods, only pure milk can be used; hence a system of inspection of premises, stables, cows, water used, dairy utensils used and management of thedairy, generally, and the milk itself, must be adopted and enforced where the milk is manufactured at factories or upon any associated plan. Then there must be less waste and expense in manufacturing and better methods of selling. If the proprietors of factories would purchase the milk or manufacture it upon the plan of responsibility, before stated, or upon any other plan which will compel them to assume that degree of responsibility which is necessary to insure the best results and is fair and just, then dairymen might hope for reasonable success without making up their milk themselves, either associated with each other or individually. If, however, no such arrangement can be effected with proprietors of factories now existing, then what shall the dairyman do? To go on as heretofore is certain loss. Shall he quit the business? That he cannot do at once without sacrifice of property. Shall he make his milk into butter and cheese at his own home? or shall he associate with certain of his neighbors and they make up for themselves? The question whether a dairyman shall himself manufacture his own milk into butter and cheese, will of course depend on circumstances. Where he is capable, favorably situated and able to supply himself with proper facilities and willing to give careful personal attention to the business, undoubtedly he can make more money, all things considered, by manufacturing his own milk. The time and labor devoted to the work would not exceed much if any the time, labor and expense of carrying the milk to the factory and the sour milk, butter-milk and whey retained would be valuable to raise calves and pork. But where not thus situated, probably it would be more profitable for the dairyman to associate with others and have it made up at a factory of their own.

MR. LAMBERT (Canada) inquired as to the amount of milk required at different times of the season to produce a pound of butter or cheese.

WILCOX: Thought 22½ pounds sufficient to produce a pound of butter. His plan was to use the old style shallow pan; did not like deep setting; did not believe as now worked that we received all there was in the milk.

MR. BOIES used 23 pounds of milk for pound of butter.

DR. WOODWORTH used less than 22.

HON. WM. PATTEN said there was a great difference in the yield—it was all the way from 20 to 40 pounds; the season, and the feed used, had much to do with it.

C. C. BUELL: Did not know whether Judge Wilcox was a Granger or not; would make a good one at all events. Did not think all his statements would "hold water." Did not believe any factory could give a certain number of pounds of products for a specified amount of milk. It is all mixed—no two alike; each thinks his plan the best, and the only. The largest yield he knew of was one pound of butter from twenty pounds of milk. He knew of factories only paying fifty cents per 100 pounds for milk; this is too low; farmers could not live at it.

WILCOX: Advocated no definite plan of setting. And in reference to capital going into the business, he knew of no capitalist going into it; they were mostly irresponsible men, of no bottom whatever, which the dairymen of this vicinity had found out to their sorrow of late.

E. H. SEWARD: Thought Wilcox made a good point when he described the loose manner in which the factories are now run. It is a fact, the dairyman knows nothing about what is being done with his milk. It pays the factoryman better to make both butter and cheese, and so he makes it. The factoryman is independent; he has your milk and your money. He pays himself first and you last. You stand all the bad debts, shrinkage of weights, bad cheese, and all the other bad things of the business. The dairyman should have something to say, as to how the milk shall be worked up, how and when sold, and to whom sold. This can all be remedied if farmers will all unite.

C. H. LARKIN said the whole plan needed moral support, before any radical change could be effected. In reference to capital invested, he said, in 1875 the Condensing Co., of Elgin, made the following figures with reference to the patrons delivering milk at their factory: Putting land at $55 per acre, cows at $50, and horses at $100 each, there was invested $553,293. The value of milk produced by these patrons was $61,812. Lands have not essentially changed, cows have. Had no direct interest in any cheese factory. Most certainly dairymen had a right and ought to know just what is being done with their milk. Had often kept his milk at home. Thought that 20 4-7 pounds of milk was enough to produce a pound of butter; he had also used 28 4-5 pounds for a pound of butter. He feeds high; believed it the best plan.

HON. WM. PATTEN: Had been a patron of a factory for five years; it did not pay; must try some other plan. Had known cheese sent to Chicago and sold for 2½ cents. After paying for selling, how much was left? Was now working up his milk at home, and found it the true and best-paying plan.

W. W. BINGHAM gave interesting figures as to his dairy. Sold his butter in Chicago.

G. P. LORD said the plan, or habit, of skimming milk was a fraud, and should be stopped; if every patron should skim his milk it would bankrupt any factory.

WM. LAMBERT: Told his experience with watered and skimmed milk. He brought suit against one patron from whose milk he had taken twenty-five per cent. of water, because he did not see him put it in. We needed better laws to prevent the adulteration of milk.

On motion, the chair appointed R. P. MCGLINCY, C. C. BUELL and E. H. SEWARD a committee to nominate officers for the ensuing year.

The secretary read the following report as the doings of his office for the past year:

SECRETARY'S REPORT.

Cash on hand at last report	$ 1.04	
Cash received for membership	4.00	
Cash received for reports sold	.75	
Cash received for advertising	32.00	
Cash received from H. W. Mead, Treasurer	79.00	
By cash paid for printing reports		$111.00
By cash paid for postage, stationery, etc.		2.75
To cash on hand to balance		3.04
	$116.79	$116.79

Which report was accepted and placed on file.

Wm. Burton said—in reference to skimming—it was a bad practice. If you take a little for coffee, and then a little for strawberries, and then a little for butter, you would soon take it all. The dividends are small as it is; if this practice is pursued they will be still smaller. The manufacturers test the milk, and should receive none but good. The dairymen themselves were to blame. We could really tell but little about the dividends we see published; they are often paid larger than they really are, so as to draw patrons from other factories which pay less. A good deal of jockeying is done.

Wilcox: Was glad to hear Mr. Burton's remarks, but was sorry to know such facts existed; it was impossible to get good dividends where such practices were indulged in; he was astonished to know the practice existed to such an extent. The making of butter and cheese from the same milk was a new thing. It took time to perfect the business so as to make it profitable.

G. P. Lord said if permission to skim was given, he could get rich out of water.

MC RICHARDS: Thought if all patrons of a factory took the same ratio of cream from their milk, no moral wrong was done. All would furnish alike and all receive alike.

WILCOX: Thought the best plan for each dairyman was to take out just what he wished for family use, when it was milked, but never skim.

MC RICHARDS objected to the general tone of the discussion. He did not believe the dairymen of Illinois were all dishonest or foolish. He did not believe the practice of skimming was near as great as represented, at least in McHenry county; but yet, if any is done, it ought to be stopped.

C. C. BUELL said the question was being treated in a "milk and water" way. He thought they were making a "mountain out of a mole hill."

D. C. SCOFIELD added his protest against skimming. It was all wrong, and the crime was in proportion to the amount taken. One takes a pint, one a quart, and pretty soon you have taken all there is worth taking.

L. BARTLETT: Said there was a great difference even in good milk. Some is worth two cents per gallon more other. He could not believe this practice existed to any alarming extent. He had a better opinion of dairymen.

G. P. LORD said the best plan was for each dairyman to keep a cow for family use.

A member said the evils extended to the factories, where each employe took all the cream he wished for family use—or even more.

After some further discussion of this subject, it was dismissed, all feeling they had been pretty well skimmed.

The committee on nomination of officers for the ensuing year made the following report, which on motion was adopted, and the names submitted were declared duly elected :

President, Dr. J. TEFFT, Elgin.

Secretary, M. H. THOMPSON, Elgin.

Treasurer, R. M. PATRICK, Marengo.

Vice-Presidents, Hon. NATHAN WILLIAMS, Rock Falls ; Hon. WM. PATTEN, Sandwich ; S. W. KINGSLEY, Barrington ; Dr. J. WOODWORTH, Marengo ; J. R. MCLEAN, Elgin ; I. BOIES, Davis Junction ; L. BARTLETT, Bartlett Station ; Prof. F. H. HALL, Sugar Grove ; I. H. WANZER, Galesburg ; CHAS. BOONE, Winnebago ; JOHN SMALLWOOD, Freeport.

On motion, the convention adjourned to meet at 7:30 p. m.

EVENING SESSION.

WEDNESDAY, DEC. 11, 1879.

Upon the reassembling of the convention—

Topic No. 8—"Is it profitable to grind feed for the dairy? if so, can it be profitably done on the farm?"

This was considered a very practical question, and one which was of great interest to all dairymen. Their attention was more particularly called to it last winter, during the mud embargo of the roads.

E. H. SEWARD said it was an important question; but just now, as grain is so cheap, it was a question as to profit, between grinding and feeding whole. Grinding at home costs a great deal. The iron mills only cut, they do not grind. If there was some sure, cheap way, it might pay to grind on the farm, but at the price of grain now it would scarcely pay. If a few neighbors could unite in one mill—and that a good one—he thought it might pay. Thought to steam feed was better and much cheaper and made better milk. Two bushels of rye would make five after it was steamed, and would feed 45 cows one day. After steaming it should be mixed with bran and fed warm. It took longer to cook corn than rye. One bushel of rye is equal to three bushels of oats for milk. His plan was an upright steamer; water flowed from an elevated tank; the grain was steamed in a barrel. About one and one-half hours was consumed in cooking a batch. It was less labor than grinding, and cheaper, for the fuel was no object as a few cobs did the business. Stock prefer steamed to ground feed. Cows will shrink when changed from cooked to ground feed. Had experimented with all varieties of feed; believed cooked the best, but must not be fed too hot.

C. C. CHURCH had known cows to become spring poor on cooked food; did not think it as good as dry feed.

C. C. BUELL thought grinding the best plan, and believed it paid. He used a "Big Giant Mill" and ground on the farm; could grind fifteen bushels per hour if kept in order. Commenced to grind as soon as hard enough in the fall. Used horses or mules as power. It did not pay to haul over two miles to mill.

CAPT. W. H. STEWART thought it paid to grind, and if it could be ground on the farm all the better.

DR. TEFFT believed in grinding, but wanted his ground very fine—it was the only way to get good results.

WM. PATTEN had used an iron mill, with good results. Now chopped his feed fine, which also gave good results.

MR. LAMBERT inquired as to the value of the cob ground; the opinion being that there was no value in the cob.

WM. PATTEN thought the profit of grinding depended a great deal upon the amount of labor required, etc.

C. C. BUELL said he had often changed from ground feed to stock corn, and found his cows did well.

W. W. BINGHAM: Believed in grinding. Had used all kinds of feed—found corn and oats to be the best, all considered. Often mixed bran.

C. C. BUELL: Asked as to feeding cows buttermilk, and how fed.

MR. LAMBERT said buttermilk was not fit to feed to cows; if fed to one cow, her milk would spoil a batch of 4,000 pounds; it took five pounds more to a hundred for butter, when fed.

BUELL thought we must not draw too sudden conclusions; bran if fed alone made poor milk, but if mixed with other feed it was good; it might be so with buttermilk.

W. W. BINGHAM: Thought sour milk fed to cows would affect butter.

MR. LAMBERT wanted to know how we could have our milk come to the factory in better condition. But no one seemed to know just how to do it.

Topic No. 9—"Should gross or net figures be given at conventions?"

No one seemed to take interest in this question. The discussion rambled over the entire dairy question.

LAMBERT thought that cows when warm should not be allowed to drink cold water.

MR. PATTEN said hot and cold milk should not be mixed.

MR. LAMBERT said in Canada all milk was carried in large cans, whille small ones were used—each farmer bringing his own milk. He liked this plan the best.

DR. TEFFT inquired if any dairymen had experimented—as keeping green corn.

MR. PATTEN had cut clover green and put in his barn. Was told it would burn his barn, but it did not. Was good feed, his cows liked it, and it produced a good flow of milk. Believed this the correct plan.

On motion, the convention now adjourned to 9 a. m. to-morrow.

WEDNESDAY, DEC. 12, 9 A. M.

After the convention was called to order, topic No. 2 was again resumed, as the subject of soiling was considered of great importance to the dairyman.

G. P. LORD said he had read in the *Country Gentleman* how we could cut but 40 tons per acre, of green corn, while in France it is claimed 120 tons can be raised. Now can we raise 120 tons per acre? If one person can do it, all can do it. Under the same circumstances, he believed corn fodder very valuable feed for milch cows when dry weather usually begins. In August, he began feeding 40 head one bushel of cut-corn fodder per day—i. e., run through a cutting machine. One-third of an acre would make 1,600 messes; this was cheap feed. To make it pay we must keep more stock on the same land; we must make more than we do now. The French people have a mode peculiar to themselves. They dig deep trenches in the ground and bury the green corn, which comes out sweet and good—is kept in this manner for a long time—when it is freely eaten by the cattle. Anyone could try it, it costs nothing.

DR. TEFFT thought this an important question, and should be further discussed. He quoted from a paper read by ex-Governor Price, of New York, on this subject, showing the plan of burying. Said it was chopped fine and then spread in layers in ditches, with layers of straw, and then covered two feet deep with earth; pains is taken to close all cracks or openings. When taken out it showed no fermentation, and stock would eat it readily. Could be kept sweet by this plan for one year. If this is a fact, we can keep our cows cheaper than we now do. Two acres would keep a cow for one year.

GEO. P. LORD said the French plan was to dig trenches nine feet wide by four deep; when filled was raised above the level of the ground. Some have said, to dig these trenches would cost more than to build all our railroads—they might be worth more. The country was new yet, and we have much to learn in the line of agriculture.

MR. LORD did not advocate this expensive mode; had had experience in feeding; in the old way fed corn-stalks whole, now cut all his stalks. They were then out of the way—did not trouble in the manure.

WM. PATTEN thought the present style of plow had much to do with the kind of manures used.

W. W. BINGHAM asked if there was not some other articles as good as corn for soiling.

WM. PATTEN wanted to know if we were far enough advanced to engage in this kind of farming. The more he put upon his farm the less per cent. he received from it. In Germany they had no fences. All stock was kept by soiling. As to the number of cattle kept on an acre, he could now keep double the number formerly kept, or twenty years ago. Some dairymen had said that one man should be employed on the farm to every fifteen cows; at present prices the receipts of the dairy would not pay the help. If one man could keep 60 cows on 100 acres, another ought to do the same. And if it can be done, then the most of our farmers are snstaining a great loss, and are far from a perfect style of farming. He began by sowing rye in fall; in spring sowed oats—four bushels per acre; then drilled corn, then field corn; also raised beets and turnips and other roots; also using corn meal. By this plan he could make one acre keep one cow. Sowed his rye at different times, as well as corn, so as to have green feed at all times. He had come to this meeting on purpose to learn about soiling. Most men were land poor; they were compelled to spread their manure too thin. Used three bushels of seed per acre for drilled corn.

GEO. P. LORD: Said clover was used by many. Also Hungarian was much in favor, as two crops per year could be raised. He used two bushels of seed per acre for drilled corn, and when full-grown could see only the first row.

BINGHAM said after cutting his rye he then used the same land for corn, thus raising two crops per year. Kept his cows in the stanchions 20 hours out of the 24. By this style of farming, the small amount of land used called for less labor—he used no pasture at all—and the land tilled is consequently very rich and productive.

THOS. BISHOP: Thought this mode of farming looked green. How 10 acres could feed 60 cows in summer was a mystery. He used a large piece to feed 30 cows; did not believe in this wheel-barrow style of farming. Ten acres could not keep three cows; it could not be done. He was one of the doubting Thomases.

BINGHAM: Fed meal all the summer. Used orchard grass and red clover.

DR. TEFFT said he noticed that Ben. Butler said we of the United States were land poor, while in France ten acres was considered enough, where the whole country only about equaled Texas. France, in 1876, exported $186,720,000 of butter and cheese, while we only exported $17,789,000; theirs are small farms ours are large ones.

Wm. Patten thought it would be a long time before we could reduce our living expenses to a level with Germany or France.

Bingham said it was an established fact that small farms would always yield a greater per cent. than large ones.

Thos. Bishop: Could see no difference between large and small farms. A small one could keep four or five cows, a pig, a chicken or two, a goose and a turkey or two—how could these manure it so as to produce such wonderful crops? It can't be done; its all nonsense. Small patches may do for amusement, but when you talk about making money, you have got to have room to do it.

Bingham said on 36 acres he raised corn, cherries and all kinds of small fruits, as well as eight or ten cows. Made a good living and more too.

Wm. Patten inquired how much he paid for labor.

Mr. Bingham: Do not call my own time worth anything, and I do most of the labor.

S. N. Wright inquired of Bishop how many cows he kept.

Mr. Bishop said he had 40 cows.

Mr. Wright: Had considered Mr. B. one of the best farmers in the county, but was now in doubt, as he (Wright) had only about one-half as much land as Bishop and he kept 45 cows and four horses. Came to this meeting to learn about soiling. He felt confident that no one was aware how much stock could be kept by soiling and feeding in the barn. Thought one acre sufficient to keep a cow.

MR. BISHOP: Knew many men around him who were trying to carry too much; were always hard up for money. He kept on his farm 40 head of cattle—and managed to keep out of debt, and have $1,000 a year more than he knew what to do with. Kept plenty of pasture; only fed three acres of fodder corn the whole season, and that was not fed yet. His expenses were light; he paid but $12 per month for help.

S N. WRIGHT: I paid only $10.

BINGHAM: I do my own work, which is cheaper still.

MR. LORD here stated that it took about 15 minutes to cut the feed for 40 cows at one feeding.

After some further discussion of this subject, the matter of adulteration of milk was again taken up—when Geo. P. Lord offered the following resolutions, which were seconded by W. W. Bingham, of Marengo:

WHEREAS, It has been publicly stated in this convention, that the practice of skimming milk is quite general with those furnishing milk to our creameries, and that this habit has obtained mainly through the misapprehension on the part of dairymen, and whereas the adulterations of milk by substracting cream prevents manufacturers obtaining the best possible results, and reduces the current price of pure milk, to the injury of all interested in the business, and

WHEREAS, In the present depressed state of the market, it is of importance that the quality of dairy products be greatly improved, and this improvement can only be achieved by the use of pure and unadulterated milk, therefore

Resolved, That the abstracting of cream from milk furnished those who manufacture it and divide the proceeds pro rata among their patrons, is unjust, in that it unfairly reduces the value of all the pure milk furnished such manufacturers and injures the reputation of the dairy products of the West, and that such practices should be abandoned at once.

Resolved, That, in the judgment of this convention, those who receive and manufacture milk, the proceeds of which are to be distributed pro rata among their patrons, have accepted a sacred trust—a trust requiring great vigilance and care—and that they are morally as responsible for the quality of milk they receive, as they are for the products of their factories, and that it is as unjust for them to receive adulterated milk, knowing it to be adulterated, as it is for dairymen to furnish such milk, for they cannot but know that the adulterated milk reduces the value of all pure milk they receive, and therefore works to the injury of their best patrons.

Resolved, That as it is absolutely necessary that the quality of our dairy products be so improved that they will command a price in the market that will remunerate the producer for his milk, and as such improvement in the quality can be obtained only by the use of pure and unadulterated milk, this convention advise all engaged in the business of manufacturing milk, to adopt at once a thorough daily inspection of all milk received by them. Such inspection should show the temperature of the milk when received at the factory, the quality of the milk as indicated by the lactometer and the quality of cream in every hundred pounds of milk, and should be recorded in a book in such form and manner as would enable all their patrons to know the daily average quality of all milk they receive, and they should positively refuse to take milk from any and all persons who skim or abstract any portion of cream from their milk.

MR. LORD spoke to these resolutions, strongly deprecating the practice of skimming. A farmer might just as well take one can of water and one can of milk to the factory, and ask pay for two cans of milk. The practice was wrong, and should be stopped. How is it with the individual who accepts the trust to receive this milk? Does he know of this skimming? or does he consent to it? If 20 men take to a factory, and five take poor milk, the other 15 would have reason to complain and just cause to protest and demand that all bring good milk. When cows are coming in at all times of the year the milk should average about the same; of course where grain is fed in abundance the milk is of a better quality. There is not a set of dairymen of the whole world that feed as high as the Illinois dairymen. The Eastern dairyman cannot afford to feed, for his grain is worth more than his milk. There is no reason why we should not make the best product in the world. He admired a man who could make a good cheese without using a particle of cream. The skimmed cheese was really the philosopher's stone.

C. C. BUELL: Was amazed that so much could be said on this matter of skimming; he really did not know how to vote. It was all plain, for it rested with the farmers—they were to blame if there was any blame; did not think any resolutions would prevent it.

MR. LORD: Said the question had been discussed at every meeting of this convention, and now some action should be taken. Silence gives consent.

W. H. STEWART: The resolutions seemed like an attempt to shift the responsibility—it was always somebody else. The remedy lies just where the crime lies. No one wanted to go smelling around, and tell his neighbor he was skimming his milk and that it was wicked, and that he should cease the practice at once—or go where wickedness finds its reward; this would be a small and mean thing to do. Factories are thick; confusion would be the result. The farmer and not the factoryman should make the charge. There is no way to get at it. Who is going around to find it out? It would be similar to the tax on incomes; it would be odious—it could not be done. Did not like the resolutions.

MR. LORD said: It was stated here yesterday that the farmers were the dishonest ones; if this was not true, it should not be said. If there is no way to find this out, then this statement should not be made. The person who receives the milk should know whether it is adulterated or not; if he has no means of knowing, then this charge should not be made against the farmer. The person who has the custody of the milk is the proper person to watch this matter, and if necessary make the charge—whether it be the richest or poorest, largest or smallest patron of the factory. No man has any right to take any cream at all—and no maker can say so. We are zealous about this, because our money is in it. We have a right to watch this. If one patron is crooked it interests all, and we have a right to demand that all shall be honest. Our product is double in value all the gold and silver in the United States; indeed, it is so large that one can hardly conceive or comprehend it, and is constantly on the increase. He spoke warmly as to the second resolution, and the trust accepted by the manufacturer—he was the proper person to detect any wrongdoing, and should at once bring all guilty parties to justice.

C. C. Buell objected to this debate, as it was a wholesale denunciation of manufacturers.

Capt. Stewart also thought it taking too much latitude, inasmuch as it was attempting to place all the blame upon the manufacturers. This was all wrong; they have sins enough of their own, without assuming for others.

Thos. Bishop: Said most of these charges were made by men who did not patronize cheese factories. They sell to the condensing factory and have no right to complain. They take their Sunday or surplus milk to the cheese factory, and it is the poorest milk received.

After some further discussion, a vote was taken, the resolutions were adopted by the convention, thus placing themselves squarely on the record as against skimming, or receiving skimmed milk at factories.

Topic No. 10.—"Do the benefits derived from manures equal the depreciation of dairy stock?"

JOHN KEATING: Thought this a hard question to answer, but a very important one. He believed the depreciation of a dairy to be at least 12½ per cent.; at the same time he believed the manure would nearly if not quite offset this. Manure is worth $10 per head per annum from a large dairy, if rightly applied. He thought top dressing the best plan of application.

THOS. BISHOP: Received more from old cows than it cost to buy new ones; therefore it was a gain and not a loss to change cows.

After some further discussion of this topic the state of the finances of the association were thoroughly discussed.

DR. TEFFT stated the present condition of the treasury, strongly urging all to become members, so that the proceedings might be promptly published.

R. P. MCGLINCY also spoke to this question. He said the reports ought to be printed, and that the secretary should be paid; no one could afford to work for nothing—gratuitous labor was always dear labor.

SECRETARY THOMPSON suggested that as the annual fee was so small—only one dollar—that all double up, and the difficulty would be overcome at once. This suggestion seemed so sensible that the double-up plan was adopted at once, whereupon the financial condition was greatly improved.

DR. SLADE said although the association were making efforts to secure aid from the state, it might be a long time before we could get it.

On motion of G. P. Lord two more members were added to the committee on legislation, one of which should be the president. And on motion of C. C. Buell, the committee were voted power to appoint the other member—which the committee proceeded to do by appointing Mr. M. H. Thompson as the other member.

On motion of M. H. Thómpson, it was voted to make all members of the press, present, honorary members of the association.

On motion of W. W. Bingham it was voted to invite the ladies of northern Illinois to attend and participate in the meetings of this association. He believed the ladies could help very much in making the meeting interesting. He also extended a cordial invitation to all to attend the next annual meeting of the Kishwaukee Farmers' Club, to be held at Marengo soon. He further invited the Illinois State Dairymen's Association to hold its next annual meeting at Marengo.

R. P. McGlincy spoke in favor of the next meeting being held outside of Elgin, and after some discussion it was unanimously voted to hold the next annual meeting at Marengo, Illinois.

Thos. Bishop was glad to see improvement being made in the manner of conducting the meetings. We had formerly been overrun with professors. They did not come any more; hoped we were done with them. All had some patent, or salt, or something else, to sell.

After some further promiscuous discussion the meeting adjourned, to meet at 1 p. m.

THURSDAY, DEC. 12, 1878, 1 P. M.

Convention called to order as per adjournment, when Topic No 11—"Is it practicable to reduce the cost of producing milk so as to correspond with the decline in prices?"

JOHN KEATING read the following paper upon this topic:

JOHN KEATING'S PAPER.

As surely as the summer's bloom is followed by the winter's snow, as surely as the copious rain is followed by the parching drought, as surely as the glory of mid-day is followed by the darkness of the night; so surely are times of high prosperity and inflated values followed by periods of depreciated stagnation and distress. Such has been the experience of mankind from the beginning, and such has been our experience of late.

We have passed through the happy days of prosperity, into their pleasant heats, their fertilizing showers and their glorious sunshine, and we are now surrounded by wintry cold, draught and darkness. What then are we to do? throw up our hands in despair, and exclaim that it is useless to struggle against hard fortune? By no means. Despair helps nothing and summer will come again. The question then suggests itself, is it possible for us to reduce the cost of producing our milk so as to correspond with the decline in prices, and thus to do as well in the future as in the past? To this I would most emphatically answer, no. It is not possible to reduce our expenses so much, the depreciation is too great. We must be satisfied with cheaper living and smaller profits.

But, while we cannot do everything, we can do something; we can do much. We can lessen the cost of producing milk very much by pursuing the right course with patience, vigor and determination.

What then is this course, and how can we pursue it? And here I must confess I feel my inability to point out, much less lead, in such a course, and that I can but offer a few suggestions which have occurred to my mind.

The first, and most important step in reducing the cost of producing milk, consists in increasing the average yield of our cows. Worse than dull markets, worse than low prices is this fact; this lamentable fact, our average yield is too low. We feed sixty cows to produce the milk that fifty ought to make. In times of high prices we might endure this; at present it presses us severely. This question of a high average is really a most vital one. Were we to know the number of cows we keep for nothing, were we to know the number, we keep at an absolute loss, we should be struck with horror. "Where ignorance is bliss, 'tis folly to be wise," may be sometimes true, but where ignorance is loss and ruin, 'tis folly not to be wise. Is it a fact, as often asserted that as the dairy increases our average decreases; if so, why is it so? The principal reason is, I think, that for years we have been pursuing a suicidal course, regardless of many warnings. We have been selling our best calves to the butcher, raising few or none of our own cows and depending on the culls and scalawags of the North-west to supply our dairies. This slaughter of the innocents must cease. We must raise our own cows from our best calves, and when we have done this we shall find our average much increased, and consequently our production cheapened. It will be of little use for us, however, to raise our own calves if we do not take particular pains to raise good ones. In order to raise a good average of calves, it is necessary that the cow should be a good milker and that the calf be sired by a male of a good milking breed. This is a matter of the most vital importance. A first-class male is a necessity in every well conducted dairy, and the man who uses a poor, infirm beast merely because he gets him cheaper, is very blind to his own interest.

The importance of this question of a large average yield can hardly be exaggerated; it is the foundation of all successful dairying. The man who gets from his cows an average of 2½ gallons, will prosper, while his neighbor, who gets 2 gallons, will lose. Simply because one man makes a profit, even it be a small one, while the other man gets back barely what he gives and sometimes less, and consequently never gains. I firmly believe that this matter of small and decreasing average yield, has injured the dairymen of the North-west more than disease, accidents and low prices combined. We must constantly bear in mind that it is on the profit we live; on the excess of receipts over expenditures. This fact alone will account for those cases, with which we are all familiar, where men with small dairies and small farms have prospered, while others whose annual sales have been much larger have lost money. We *must* get the deadheads out of our stables, we *must* make a better average in the future than in the past or the depreciation in prices will ruin us.

You will notice that in speaking of this necessity of a better average yield from our cows that I have dwelt mainly on the necessity of raising our best calves and of weeding out our poor cows. I have done so not because I consider that this is all that is necessary, or even that it is of the first importance; far from it. With the best of cows we will fail, and miserably fail, if we do not shelter them from the cold, feed them generously and water them abundantly. But in this matter of feed and shelter, as far as my observation and experience goes, we have done well in the past and are doing well in the present. In the matter of water, perhaps, this is not so generally true. Some cows still drink in holes, broken in the ice, on rivers and sloughs, at the risk of breaking their legs; and some travel a mile or less across a snowy waste to a distant spring. This is all wrong, it is expensive, it is ruinously extravagant. Clear water, abundantly supplied in our barn-yard to our cows, will prove a paying investment and will materially cheapen the production of milk.

Give me *good* cows, not runts or scalawags or culls, warm barns, well ventilated, rich food, properly fed, clean spring or well, water close at hand, careful and intelligent milkers and I will produce milk as cheaply as it can be done in North America.

Ah! but careful and intelligent milkers are necessary, and they cost money. Do they not cost too much? Must we not reduce the wages we pay, if we would keep pace with the reduction in the price of milk?

We must; we certainly must. I believe that the laborer is worthy of his hire. I would be the last man on earth to attempt to oppress or grind the workingman. But we must be just to ourselves and to our families as well as to our laborers. The dollar which we pay him now has increased very much in value in purchasing power within the past few years. Prices of clothing and food are much lower, the expenses of an individual or family much less. We ourselves receive much less for what we sell than we formerly did, and justice—simple justice—demands that we should hire labor at a lower price than we have been paying. In order to effect this it is necessary that we should act together with some degree of unanimity. If we succeed in doing this, we will have cheapened the production of milk so much. This question of wages is a very important one. Dairymen must from necessity employ a great deal of help. I presume that the wages paid will average on most farms one-third, and on some even a larger proportion, of the expenses. A reasonable and just reduction in wages is therefore a thing much to be desired, but we must guard against false economy. It is not economy to hire a scalawag man, any more than it is to buy a scalawag cow; we must carefully avoid both. It is not economy to keep but one man, when you have work for two. Pay good men fair wages, as the times go, and employ enough help to do your work in a thorough and seasonable manner. With brains at the helm, I am convinced that the more men employed, the more money made. Let us get out of our farms and our cows *all* that is in them. Let us raise no weeds, keep no dead-heads, and we will succceed in spite of low prices.

It is important for us also to consider that everything which tends to a better system of farming, to an increased yield per acre from unplowed meadow and pasture lands, to better drainage, to better care and application of manures, better care of tools, better fences, more thorough eradication of weeds—the curse of the agriculturalist; in a word, *everything* that tends to thrift, economy, enterprise and progress, will cheapen the production of milk, directly or indirectly.

As I have said before, I am not sanguine that with our best endeavors we can keep pace with the depreciation in price of our products, but this very depreciation may be profitable to us in another way.

If the efforts that we are obliged to make to stem the tide of bad fortune should make us better farmers than we were before, better men than we were before; if it should cause a renewal in us of the old-fashioned virtues of honesty, economy and industry; if it should cause us to adopt the golden rule, "Pay as you go," if it should compel us to do without superfluities and luxuries until able to pay for them, then might we truly exclaim with the "Bard of Avon".

"Sweet are the uses of adversity,
That like a toad, ugly and venomous,
Bears yet a precious jewel in its head."

THOS. BISHOP: Asked if there were not many ways of furnishing milk. Some used a small patch of ground, bought all their feed and made a large quantity of milk, while some used large farms and produced no more. Which was the better plan? Who could give the exact figures? He would like to know which was the cheapest. He could keep one cow on five acres; no less. Some claimed to keep one cow on two acres; did not believe they were well kept. As to why the price of cheese is so low? it was all plain to him—it was because there was too much cheese. When pork is low, there is too much pork; when wool is cheap, there is too much wool; and the same with everything else. We are now making more milk than the land will naturally produce. We would make more money to kill one-half of our cows and let one-half of our farms go wild. He made eight or ten cans per day; his neighbors made a long wagon-load; we all make too much. His expenses, of all kinds, including taxes etc., were about $900 or $1,000 per annum. As to the loss from keeping up a dairy—there was no loss. He sold his fat cows for about $40 per head, and could buy in for less money. Always kept his cows fat and in condition to sell; he could clear annually from his little farm $1,300 or $1,400; what large farm could do better.

W. W. Bingham was also in favor of small farms. There was less wear and tear, and on the whole were far more profitable and more desirable.

J. Keating said it would not do for one man to reduce his milk one-half, with an idea of controlling the market. If there could be a concert of action and all do so, it might do some good. It seemed to him that the sensible plan was for each man to make all he could from his land, let his farm be large or small; each farmer should keep all the stock his farm would carry.

C. C. Buell could see, that if you cut an article in two pieces, how it might affect the whole; same with silver or gold. Thought a good agricultural paper was a good medium to learn how to do these things scientifically; there had been too many hap-hazard experiments; must get down to business and facts. As the Germans and French people do, we lacked knowledge as to soils, etc. We ought to know *why* bran is not good feed to make butter; we do not. We only know such is the case. As to the low prices, no one rule could be adopted. No two farms were alike; every farmer must make a rule for himself. Science at best was nothing but good common sense.

S. N. WRIGHT: Was a small farmer. Began with 125 acres; now used but 85. Had paid out since last January $101 for feed; had kept 43 cows. While Bishop had used five acres of land for each cow. These five acres, at $70 per acre, would be worth $350; which, at ten per cent., would be $35. Now this is as much as an average cow will yield net. Where is the profit of such farming? He could keep one cow on two acres, worth $40 per acre—or $80 per cow for land—the use of which at ten per cent. is only $8. His labor was no more than Mr. B.'s, but his profits were much larger.

A. GULICK said the only way was to use all the manure we can and raise all we can—if you are a dairy farmer, then make all the milk you can. The average farmer gave too little attention to manure. He here gave an account of sickness in his herd, which so far he could not understand or explain.

S. W. KINGSLEY: Wanted to know the value of salt as a manure, as experimented with by the Kishwaukee Farmers' Club.

L. W. SHELDEN said exact figures had been kept, and would, when completed, be given to the public.

S. N. WRIGHT said that oil cake was an excellent feed for milch cows, and was not expensive in proportion to its real value, as compared with other feed.

S. W. KINGSLEY also spoke in favor of oil cake, as being a most excellent feed for dairy cows.

HENRY SHERMAN: Said he was 70 years old—most too old to make a speech. He was a city dairy farmer—that is, he let his farm—and took all he could get for the use of it. Could not tell whether he was making or losing money; he knew if a cow died he was pretty sure to get the hide. He did not believe all in one kind of farming; would not take all his eggs to market in one basket. He had drifted into dairying and should most likely hang on until he died; could then tell whether he had made or lost. He raised a little sweet corn for the packing factory. Sold last year $1,200 worth. The stalks were good feed for cows, if cut while green.

DR. TEFFT: The glut of the market was not for the best goods; they would always sell. We make too much poor goods. France is doing much better than America; her dairies are paying better; their prices are more reliable.

HENRY SHERMAN said he was the man who built the first cheese factory in this region; sent to New York for his outfit. There was no cheese here then and no price. Run it the best he could, and that was poor enough, but found he had too little religion to run the business, so got out of it. Patrons were ungrateful; would leave you just when you needed the milk the most, for one dollar. Factorymen are now charging too high; they must come down; the farmer must be allowed to make an honest living, dress well and pay the minister.

COL. WILCOX said he had to pay 25 cents for good butter, while poor was worthless. Butter at 25 cents does not look like hard times. As to exporting—you do not supply the home demand for *good butter.* This should be done first, then export. All goods should be sold on their merits—the same as Babbitt or Colgate sell soap. A trade-mark is a valuable thing. You must make *good goods,* and you will find no trouble in selling. It should all be branded just what it is. Everything should be good. No farmer should keep scalawag cows; they cannot afford it. The farmer who keeps half poor and half good cows will lose; the account will just balance, with his time and labor thrown in. The cow that gives one-half gallon more than another is the cow to keep. There is where your profit is. He strongly urged all to brand their goods. Don't be afraid to put your name on every cheese box or butter tub.

R. P. McGLINCY also urged all to brand their packages. If Jones made cheese, why not put Jones' name upon it, with the date of its manufacture? Then a consumer could readily tell whether he was eating a new or old "customer." He believed it was not as much over-production as under-consumption, which affected the price. Make better goods, and then we will hear no more about over-production. Cheese is a wholesome food and cheaper than meat, and would, if good, be largely used.

DR. TEFFT said as the factories now charged five cents for making butter, they were receiving more than their share of the profit. No farmer could afford to pay this price, it was nearly one-third of his income during the summer months. The factoryman has it all his own way now, and runs his factory to make the most money for himself, and let the dairyman take care of himself.

GEO. MARSHALL said the Blackberry factory paid 40 cents per 100 pounds. Took the milk in large cans and they often found three or four quarts of Blackberry creek mud in each can. This dirty practice is not fair; goods made from such milk will not keep. Farmers, as a rule, are run by everybody: lawyers, merchants and doctors all have a pick at the poor farmer, and last, and worst of all, the cheese factoryman comes in to carry off the skeleton. They receive your milk and make it into what they please, pay you when it suits them, and as much as they please and what can you do about it? They had no system. Could not sell on board of trade. The commission men and factorymen were in collusion to rob the farmer. There is no system among them only for plunder.

Dr. Tefft said the blame all rested with the farmer, they could dictate where and how their milk should be worked up. The true remedy is not to take our milk to a factory which would not sell its products on the board of trade. He had known farmers who had attempted to speak on the board to be hissed down by the buyers because they dared to talk for their side of the question. This was all wrong. The producer, manufacturer and buyer should all work together, their interests are mutual.

Wm. Burton said, as to selling on the board of trade, it was not always possible or practical to do so. When the tenth came the farmers wanted their money. Consequently the factoryman must sell or he can't pay. Both Marshall and Wright were as fast for their pay as anyone else, and would not consent for a factory to hold goods. Therefore if there is no price on the board we must sell somewhere else. If the patrons would back him he would sell anywhere they chose.

Marshall thought that if all would sell on the board no backing would be needed. Should sell for what they could get. Our factories are not honestly run. The factory he patronized was run by a broken-down lawyer, who knew nothing about the business but to cheat the patrons. The truth is, if all would stop selling on commission the buyers would all come to the board to buy.

R. P. McGlincy: Was glad to hear this question discussed. He believed all should sell on the board or not at all. It was a fact that commission men had made several attempts to break up the board but had failed so far. Goods should not be sold at factory. Hold till sale day, then all will be sold at a fair price. There is generally a tail to all sales made on commission, either in short weights, bad pay or some other way. He urged all dairymen to patronize the board of trade and mutually protect themselves.

Wilcox said the factorymen would look out for their interest, so must the farmer or he would be left out in the reckoning.

B. Cox wanted to know if buyers would not come to the board meetings to buy *good goods.*

Wright said he had known where commission men had offered to advance money to make monthly dividends. This clearly showed collusion.

Burton did not see how a divividend could be made out without making a sale and showing the bills.

S. N. Wright knew it to be a fact that a commission man had attempted to bribe the Clintonville factory not to sell on the board of trade. The whole manner of working up and selling is a fraud on the producer.

After some further discussion of this subject, in which it plainly appeared that the system, as now practiced, in making sales was not satisfactory, the convention adjourned, to meet at Marengo, Illinois, where the next annual meeting will be held.

T. J. BURRILL furnished the following paper, which was received too late to come under its appropriate head:

FERMENTATION AND PUTREFACTION OF MILK.

In early times, with peoples as with individuals, the changes which occurred in such a substance as milk when allowed to stand for some time excited no curiosity; stirred no one to inquire why the phenomena presented took place. If any thought is given to the subject a satisfactory conclusion is reached when it dawns upon the mind that milk sours because it is its nature to do so; it becomes unpleasantly odoriferous because it could not continue otherwise. From this low beginning it is a long way and by no means one without difficulties to the full knowledge now possessed by some investigators of the changes and their causes which take place so persistently in so common an article as cows' milk. It is possible that some whose business makes them more especially interested do not yet appreciate the fact that all these ordinary changes arise from the action of living organisms altogether foreign to the constituents of the milk itself. For a long time the idea has been current that in such organic compounds changes arose through spontaneous chemical agencies, that the oxygen of the air is the chief factor in the production of the results observed. This was supposed to be confirmed by the fact that the air being driven out by heat the changes came later, or upon excluding the air, as by heating and canning, they occurred not at all. But it has been demonstrated that pure air may have free and abundant access to putrescible compounds, such as milk, without the latter becoming in the least affected. There is no souring, no fermentation or decomposition of any kind. The milk retains its freshness and purity for an indefinite length of time; only the steady dessication causes the least change. The conditions are that the air be entirely freed from suspended particles and that the vessels be absolutely cleaned, or heated to a sufficient degree to kill all living atoms and their germs. It has been shown that air sufficiently filtered through clean cotton, wool, or even allowed to settle in a perfectly quiet reservoir is inert—absolutely incapable of producing fermentation or decay. Under such circumstances temperature has no effect. The protected liquid is preserved just as well at 90° Fahr. as at the freezing point. A liquid keeps its fresh condition as long as a solid body from which all water has been evaporated.

One point remains to be fully determined. Does milk,in common with other fluids, secreted within the body of an animal, contain, before it reaches the external air, the germs which by development and multiplication may cause the changes usually observed? In cases of disease living germs are often found in all the animal fluids and peculiar phenomena have been witnessed in such fluids after extraction and exposure.* On the other hand one looks in vain with the aid of the best microscopic instruments for such living particles in the same fluids from animals in perfect health; at least this has been the case in the personal observations of the writer. Blood has been drawn with instruments made for the purpose and kept absolutely free from living organisms, though not excluded from other agencies to which fermentation is assigned, and preserved indefinitely without heating above the normal temperature of the animal from which it came. There can scarcely be a question but that in the case of perfectly healthy cows, fed upon proper diet and drinking pure water, the milk would forever keep sweet and good, if preserved from contact and inoculation with living germs after it leaves the udder. This latter, it is true, is a difficult accomplishment, but, as an experiment, it can be done, and we certainly would be unwise to assert that it will never be done in a simple and practical manner adapted to ordinary use. Some simple device may overcome the almost insurmountable obstacle now met with, and introduce a new era in the dairy business and household economy, leaving us all to wonder why it was not thought of sooner. Indeed much progress has already been made in this direction, attained for the most part by common observation and practice. Thoroughly scalding the vessels—and this just before as well as just after use—keeping everything clean, and especially free from decomposing substances, beginning with the stable and ending with the arrangements for final disposition of the products, the lowering of the temperature, and finally the introduction of some tasteless and harmless antiseptic materials as dilute solutions of thymol, boracic and salicylic acids—all looking towards the prevention of infection by, and development of, microscopic germs —surely this is progress. When thoroughly understood and appreciated that these and similar operations are really for the purpose of killing or retarding the development of living organisms, capable of wondrously multiplying themselves in a very short period of time, and causing the uninvited phenomena which so constantly present themselves in the absence of these precautions, and when it is further confidently known that the destroying agents are altogether foreign to the prized liquid itself, shall we not use the means already at our hand with more intelligence, in better directions, by more economical methods and with surer results? It is so now. Those who have adopted the germ theoy of fermentation in all its faces, and proceed accordingly, are most and surest successful in the management of milk.

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*Professor Orth, of Gottengen, Germany, says: "Recent researches leave no doubt whatever that in some diseases the blood contains during life, though to a far higher degree after death, certain low forms of animal or vegetable life."

Dr. Wm. Roberts, of Mancaster, England, says the germ theory of disease "is now established upon a firm experimental basis."

Dr. Obermeir, of Berlin, and Professor Stricker, of Vienna, find low plants, fungi, in the blood of patients suffering from relapsing fever

Dr. Neftel, of New York, says: "My experiments so far lead me to the conclusion that the lower vegetable organisms can continue to live and multiply in the tissues of living animals."

Dr. J. G. Richardson, of the University of Pennsylvania, reports the experiment of swallowing bacteria and afterwards finding numbers of them in the blood drawn from his finger.

We have been so long accustomed to the idea that organic bodies, and especially those of animal origin not wholly freed from water, *spontaneously* decompose, it is exceedingly difficult, without ocular demonstration, to fully comprehend that in and of themselves such substances as milk, urine, blood, etc., are as stable and unyielding to the inorganic elements as the stone of which the everlasting hills are composed, yet this is the doctrine which is now and here advocated. It is the docrine upon which is based the great domestic and commercial interests in the canning of fruits, meats, etc., and even in the dessication of these products. But, it may be asked, are there *no* changes in the character of milk, in the flavor of cheese, as in "ripening," or the quality of butter, as when becoming old and rancid, not brought about by the action, direct or indirect, of living things, too small to be recognized by the unaided eye? What, for instance, is the reason that the liquid in which a bit of a calve's stomach (rennet) has been macerated in a warm place, so soon causes sweet milk to coagulate? Is this, too, dependent upon particles possessed with an individuality of life quite independent of that of the animal from which the stomach came? Is, indeed the calf itself indebted to such assistance from myriads of microscopic but effective agents? Is the digestion of our own dinners this day brought about, not wholly by ourselves, but by multitudes of co-laborers that have never received our thanks for their important services?

The asking of such questions may be considered fanatical, even distasteful or almost sacrilegious by some, yet he who thinks closely and observes carefully, especially if he has the time and means for proper investigation, cannot avoid them if he enters upon the subject at all. The microscope shows in the solution from rennet as much of the germ theory of change as it does in the fermentation of milk when left exposed in the ordinary manner, and this evidence is convincing in a very high degree. Other phenomena coincide to make the conclusion irresistable. The living organism in the rennet is killed by heat, it propagates itself in a suitable liquid with the astonishing rapidity of its congeners usually found outside of living animals; a little used as seed permeates a great bulk of nutritive substance, as a little leaven (yeast, a plant) in the olden as well as the modern time, leavened the whole lump. The rennet plant can thus be cultivated, as the yeast plant is, and possibly in a much more convenient method than at present known. It *is* a plant, living, multiplying, absorbing, assimilating, dying—very low in the scale of classification, and scarcely differing from the equally low forms of animal life, yet having a definiteness and individuality which in some respects those of the highest rank, the lords of creation, might do well to imitate.

Let this example suffice. If the coagulation of sweet milk, by the aid of rennet, can be proved to be due to the action of organisms in a living state are we not prepared to accept the same or a similar agency for any change which we observe in this, apparently, unstable fluid? But the evidence concerning some of these changes, as that of souring, is still more direct, certainly better and more generally known. We cannot be far wrong in concluding that all the processes, through which milk and its products pass, are results, direct or indirect, of living, lowly organized plants or animals. Customers say the higher organized animals have something to do with certain changes of which we do not speak.

What is the nature of the microscopic creatures to which such marked results are attributed? The word *fungi*, now in general use, is commonly introduced whenever any name is applied to the organisms with which we have to deal. But this is applied to an immense order of plants of which the members differ among themselves almost as much as the trees of the forests and grasses of the fields. They have something in common as to their food and mode of life; but differ wondrously in appearance, in size, in method of propagation, etc. There are probably not less than twenty-five hundred species of fungi growing naturally in Illinois. Some are found upon old logs, some on upright trunks, some on or in the soil, some only on the excrements of cattle,some on dead twigs,some on living leaves, some on the skins of animals and some in decomposing fluid substance. We can hardly imagine a place on or in the earth, or organic substance of any kind, where or upon which fungi are not found of one kind or another. We pride ourselves upon our cleanliness, but it is not hazardous to assert that every human being in our broad prairie state has living fungi in his mouth. Nevertheless the ubiquitous beings are subject to prescribed conditions of growth. They must have the proper food each according to its kind, the proper amount of moisture, the proper degree of heat etc. The well informed advocate of spontaneous generation of organic species does not think of asserting that the specific forms now existing are self-produced from the inorganic elements. Whether this process is ever true or not, even the lowest forms that can be classified and so distinguished as fungi have, as all scientists admit, sprung from parents like themselves. If spontaneous generation is true, it applies to still lower living atoms, which reach characteristic distinctiveness only through long series of development and so gradual change as scarcely or not at all to be noticed within the span of a human life. We may therefore say the species of fungi are as distinct as those of the higher plants with which we are better acquainted.

Again, the names mold or mildew are very often used in connection with such fungi as are supposed to be the cause of disease, of fermentation, putrefaction, etc. But these are so general in their application that little or no information can be conveyed by their use. If restricted to such species as are so commonly met with on bread, cheese, fruits, etc., the popular statements in regard to their effects are much exaggerated. For a long time it was supposed that yeast used in the making of bread and beer was a submerged form of various species of true molds, but this is conclusively shown to be an error. The blue mold that forms on bread is not the same or nearly the same which causes the fermentation of the flour in the process of raising. The molds of different kinds which appear around the edges of a neglected milk pan bear no relation to the much simpler form which induces the souring. It is probable that the species of molds in a restricted sense, do cause some of the phenomena to which this paper is devoted, but they are far from being the principal agents in the work. When they occur on milk that has stood in a warm place for some time it may be observed that there is a conspicuous absence of the putrid odor arising from such milk devoid of the molds. These are, in fact, scavengers converting the partially decomposed materials into odorless carbonic acid and water.

Professor Law, some years ago, published drawings of fungi which he believed were developed in the milk from germs taken by the cows in the water they drank. After careful inspection of the figures it seems almost certain that an error was made in the interpretation of these growths. His general conclusion may have been correct, probably was, but the organisms he observed were not those causing the difficulty. It is exceedingly doubtful whether the germs of any fungus of the rank and development of the common molds ever passed through the secretory apparatus of any animal. The crude statements about *tilletia caries* (bunt of wheat), etc., being found in the blood of cattle, has been often enough refuted.

In a recent classification of fungi (Sachs' Text Book of Botany) two orders are given including plants of lower grade than any known molds, which embrace the principal agents in these processes of fermentation and putrefaction of milk and other substances, viz: the *schizomycetes* and the *saccharomyces*. The former includes the organisms known as *bacteria* and *vibrios*, all microscopic, and some of them the smallest living things of which we have any knowledge; the latter contains the yeast plants. Speaking of those of the first order in a wide sense as bacteria, it may be said that they are so minute that they were entirely unknown until the microscope reached a high degree of perfection, and for this same reason their presence is still often overlooked. But it is to these almost invisible objects that we must attribute the main effects in the processes of which we write. It is to these that contagious diseases are mostly due, if indeed to any living thing. I have been permitted through the courtesy of Dr. H. J. Detmers, one of the United States' commissioners for the investigation of the so-called hog-cholera, to repeatedly observe in the blood, contents of the intestines, urine, etc., of diseased pigs great numbers of infinitesimal belonging to this group. Upon inoculation, or in some cases upon feeding these living atoms to healthy swine, the disease was produced time and again. Introducing a half drop of blood-serum containing these bacteria into a vial of pure milk the latter soon became swarming full of the same objects. Again transferring a minute portion of the infected milk to fresh material like the first, multiplication of the bacteria took place, and inoculation from the second vial in the ear of a pig produced the disease in about the same length of time as before. To see the form of these organisms a glass of excellent definition was required, and a power of at least eight hundred diameters. Yeast cells (of bread) are mountains compared with them. If any living things find their way through the animal tissues and escape, as with the milk, we may safely conclude it is something of this description. There is no evidence that higher and larger fungi as ordinary molds are ever developed from the minute forms described.

When fresh milk from healthy cows is placed under a high magnifier (500 to 1,000 diameters) the thin stratum appears violently agitated by currents caused by evaporation, etc., and by the molecular, oscillating motion known as the Brownian movement, but no bacteria can be found. Examine the same milk after it has stood in a warm place a few hours, and before evidence of acidity except to litinus paper is presented, a few bacteria may be observed; before coagulation they are quite common and finally become in some cases excessively numerous. Milk put in well-stoppered, scalded vials kept in a temperature of from 80° to 90° Fahr. sometimes becomes very sour but suffers no further change. But frequently after souring the inclosed liquid becomes putrid and highly odoriferous. Upon examining two such as these the difference can be ascertained. The former contains one kind of bacteria, the latter two. The first is at the outset minute and spherical or cylindrical and composed of joints which are often more or less bent upon each other. Its movements are of an oscillatory character, with slight or no progress in any direction. The second is not unlike the first in shape, though not so distinctly composed of easily-separated joints, but it moves with an endwise sliding motion of apparently, under the microscope, great rapidity. One is the lactic ferment, the other is the putrifactive ferment. They may occur together or either may exist without the other. But the lactic organism appears either more common or more active in its work.

In one experiment three vessels were placed in the same tin vessel which closed tightly. Milk fresh from a cow was placed in all of the inclosed vessels, which were of glass with open top. In number one the blade of a pen-knife was dipped which had previously been inserted in sour milk swarming with the lactic ferment. In number two a minute amount of milk just coagulated was placed, and number three was left as it was. Coagulation took place in the order named with about two hours intervening between the first and second and six hours between the second and third. After two days a mold whose creeping filaments were previously observed, appeared on the first and after one more day upon the second but the third became wholly dried before the mold fruited. This mold proved to be *mucor mucedo.*

Other experiments confirmed the announcements made by others that the bacteria are disseminated slowly through the air while mold fungi fly readily everywhere. The former are especially distributed with liquids and remain though dried in contact with solid surfaces, ready to commence action at anytime nutritive substances reach them. The minutest quantity of old milk, not thoroughly scalded, may infect any bulk of fresh material.

The following paper, by G. E. Morrow, Professor of Agriculture, Illinois Industrial University, was read:

DAIRYING AS A PART OF GENERAL FARMING.

This meeting is held in a part of the state in which the dairy is a leading agricultural interest, if indeed it be not decidedly the chief; and in a city which is most widely known as a "dairy center." The active and influential members of the association are those who are directly interested in dairying, as their chief or exclusive business. It is natural and proper that most of the discussion should be on the topics in which the experienced dairymen—those who make milk, or butter or cheese production or sale their chief or only business—feel the greatest interest. But we should not forget that over more than three-fourths of the state, on a very large majority of the 200,000 farms of the state, dairying, in the sense in which those present use the word, is almost or quite unknown. Yet, of the 700,000 cows, in round numbers, owned in Illinois, at least a majority are found outside the "dairy region" of the state. Many of these are owned by residents of towns and villages, and many others by farmers who keep them mainly for rearing calves, often not milking them at all; but we still have an immense production of milk and of butter by those who never think of themselves as dairymen, and are never thought of as such; and who manifest little interest in the proceedings of such associations as this.

It is also to be remembered that dairying, as a somewhat prominent industry, is spreading into new sections of the state; that many farmers who have grown grain, or beef, or pork, as their only products, are thinking whether the dairy does not offer better profits.

In this paper, I can only suggest, and not fully discuss, a few of the things which these facts and the present condition of the dairy interest generally, make it worth our while to think about. I cannot expect some of my statements to be accepted by all.

Starting, then, with the general propositions that it is entirely possible, even if not probable, that any industry may be overdone; that a considerable diversity of production is undoubtedly best for a country or for a large community, and generally for an individual farmer; that in farming, as in other businesses in this country, it is coming to be increasingly important that all the resources, whether in lands or in labor, shall be made the best use of during as much of the time as possible, and that future profits from farm products generally, including dairy products, will probably not be as large as they have often been in the past, I believe the future increase of dairying will be more in the way of its being made a more or less prominent feature of farming, and that a less proportion of the dairy products will be produced by those who give to these exclusive attention. There are very many cases in which, undoubtedly, it will be best to make milk almost or literally the only article sold from the farm, but I firmly believe there are many farms and some localities from which better returns will be secured for the future by increased attention to grain raising even; certainly to grain raising for home consumption by increased attention to rearing and feeding some cattle and hogs or sheep. It is not long since very many successful dairymen insisted that, however true in theory, it was not true in practice, that dairymen should aim to rear their own cows. There has been much change of view as to this; but there needs to be more, until, as it seems to me, it shall be the exception and not the rule for dairymen to buy cows.

The experiences of the year have made us see more clearly than some of us saw even a year ago, that it is not at all a matter of course that comfortable profits will come to the dairyman; and I repeat what I have before said, that I see no reason to believe we are again to see such large average returns from the dairy as we did for a considerable series of years. Dairy farmers must carefully consider whether or not they can produce the grain feed for their cows cheaper than they can buy it; whether or not they can afford to continue to make a half or a whole day's work of delivering milk to the depot or the factory; whether or not even the manager of the farm must do something more than "see to things;" whether or not "deaconing" calves is the best course.

Probably there will be little dissent from the suggestion that those who have not been largely engaged in dairying, and communities in which other branches of farming have long been pursued, should make the change into dairying only with care and slowly; that it will rarely be wise to at once get all the farms in grass, and as soon as possible fully stock them with cows. But I advise this continuance of former work, not as a temporary course, while a trial is being made, and such farmers are learning a new business, but as a permanent policy in regions in which stock rearing and feeding has proved profitable in the past, and where skill and some reputation has been acquired and good facilities for such farming accumulated, I cannot count it wise to look forward to abandoning this, except in special cases.

For years I have counted it one of the most important helps to continued prosperity for our cheese-producing interest, that more attention be paid to developing and supplying, in the best possible way, the home demand for cheese. Over a very large part of Illinois I see no good reason why each county should not produce at least as much cheese as its population consumes; why one or two or three factories should not be mainly engaged in making cheese for the local markets. With the direct sales which could thus be made, certainly as good net prices should be obtained, and it ought to be easier to obtain a local reputation than to successfully compete with the whole country. And so I should be glad to see new cheese factories in many counties of the state; not great, costly buildings and arrangements for using the milk of 1,000 cows, but neat, cheap, economically managed factories, the milk for which should be largely furnished by neighboring farmers, into whose minds might never come the thought of exclusive dairying, but who should find it payed them well to keep anywhere from half a dozen to two score good cows, well cared for, the milk from which, or a part of which, should be daily carried to the factory by the team of the factory owners, or some neighbor living further from the factory, while the farmers go on with their "general farm work."

If it seems that I have understated the advantages of the dairy as an exclusive reliance for the farmer, I may make partial amends by magnifying its importance as a help to profitable farming by those who will continue to make some other branches their chief reliances. So long as the custom continues of making almost all American cheese after one general model, it is to be expected the factory system will practically abolish farm making of cheese; but this will not be true as to butter and milk. Farmers everywhere will need and will use milk and butter for their own tables, and very many of them will continue to make butter for sale. As the country grows older, and the villages and towns grow larger, there will be a larger proportion of the whole population who will need to buy their supplies. Probably the milk supplies of cities and larger towns will continue to come mainly from those who make this a special business; but there is no reason why thousands of general farmers should not make first-class butter, and, securing a local reputation for so doing, receive a good price for it. The leading hotel of the neighboring town must get its butter somewhere, as must its leading citizens, and there is no reason why a neighboring farmer should not supply them at something above the regular price. As good butter can be made in a private dairy as can be made at a creamery. That it is not so good as a rule, is clearly true, but it can be so made, and is by a good number.

Where farmers expect to make butter for their own use, and often to have some to sell, it is clearly only good economy to provide such facilities as will make it possible to have the product good, and very often it will be found little more costly to provide for making twice the quantity absolutely necessary. The great mass of the butter made in the country will long continue to be poor in quality, and most of it made during the summer. The shrewd farmer will adapt his course to meet these facts, and most often, it would seem, he can best do this by making good butter, if any, and by making most of what he will need to sell, in winter. The arguments in favor of winter dairying, where buter is to be made in factories, are much more generally admitted than they were a few years ago. But if they have weight in such cases, they have equal force in the case of the farmer. His cows must be kept in any event, and they ought to have nearly the same care whether giving milk or not. As a rule he will expect to have milk and butter enough for his own family, and if this much can be cared for, more can be. The special dairyman may be but little more busy in summer than at any other season, but for the general farmer midsummer is not only the time when it is most disagreeable to milk and care for it, but it is also the season when, both on the farm and in the house, most is to be done. It is easier to provide for the proper care of milk in cold weather than to guard against the ill effects of extreme heat.

Another class, which may well give increased attention to dairying, is that engaged in rearing beef cattle more or less largely.

Doubtless with cheap lands and comparatively dear labor, the practice of allowing the calves to suckle the cows, receiving all the milk, has often been the most profitable. But I cannot believe this is to continue. A good cow can and will give more milk than is necessary for rearing her calf if it be otherwise well fed. Either by the plan sometimes followed, of giving one cow two calves and milking the dam of the other, or by milking and feeding skim milk, supplemented with other food, it seems certain the time is coming in this state when a more profitable use can be made of the milk than to have the calves take it all.

For such farmers, as well as for "general farmers" almost universally, it seems certain the best cows are those cows which combine milk and meat producing ability in good degree, even if they do not in either reach the highest point.

That I may not be misunderstood, I may say in the way of summary: I do not at all believe the teaching that a farmer should, necessarily, produce everything he uses, if this be possible; if he can buy cheaper than he can rear or manufacture, it is best economy to buy. But where there is a question as to which is the cheaper course, it is safer to lean to the side of home production. I would not advise a farmer to fritter away his time and strength in producing small quauntities of a multitude of products; he will do best to have one, or two, or three things to which he gives chief attention; but I grow to believe more and more strongly, that it is scarcely ever safe for a series of years, to depend on any one specialty, and so I would always have "more than one string to my bow." I do not take a hopeless view of the prospects of dairying; it has as bright an outlook as perhaps any branch of agriculture. Money is to be made from the dairy for long years to come; but, as I read the indications, it will rarely be wise for communities or individual farmers, unless in exceptional circumstances, to make milk and its products the only source of expected profit. Grain-growing and stock-rearing farmers will often do well to make more of the dairy than they have in the past. A very large part of the butter product of the country will continue to be made at farm-houses. Winter butter making has some special advantages for the farmers as well as for the creamery proprietors. Cheese factories may profitably be established in many localities where they are now unknown, especially with a view of developing and supplying the home demand. For the great mass of farmers, those cows are best which are well suited for both meat and milk making.

LARGE MILKERS.

Much has been written and said of late, in regard to the different breeds, as regards their milking qualities. Without any prejudice we give below the yield of a Holstein cow, the property of Dr. J. Tefft, of Elgin, Illinois. She is an imported cow, and is booked in the herd book, under the name of "Zwaan," and from the figures, which are taken from actual daily weights, she certainly ranks high among the great milkers of the country:

From May 12th, 1878, to March 12th, 1879, inclusive, her yield was 12,610½ pounds, or about 1,462 gallons. The time being 298 days, would make a daily average of nearly five gallons per day. May 5th, 1879, she again became a fresh milker, and now bids fair to exceed her last year's record.

AGRICULTURAL
EXPERIMENT STATION.
UNIVERSITY OF ILLINOIS.

ILLINOIS
STATE DAIRYMEN'S ASSOCIATION.

SIXTH ANNUAL MEETING,

Held at Marengo, Ills., December 9, 10 and 11, 1879.

Marengo, Dec. 9, 1879,
3 o'clock p. m.

The convention was called to order at 3 o'clock p. m. by the president, Dr. Tefft, who occupied the chair. After stating that the convention would now be considered formally opened, the president called upon T. McD. Richards, president of the Kishwaukee Farmers' club, who delivered the following address of welcome:

MR. M'D. RICHARDS' ADDRESS.

Mr. President, and Members of the Illinois Dairymen's Association: Ladies and Gentlemen: In behalf of the Kishwaukee Farmers' club, the citizens of Marengo and the dairymen of McHenry county, I bid you welcome on this annual reunion of yours. Marengo and vicinity open their homes and hearts to make your stay pleasant, and we all hope to profit from your essays and mutual discusssions. This is a region deservedly noted, at home and abroad, for its excellent butter and poor cheese. I presume, however, skim cheese will continue to be made so long as factory patrons and manufacturers can both make money by so doing. Class me as one of a large number who will not eat cheese thoroughly skimmed. "If this be treason, make the most of it."

McHenry county is one of the pioneers in the manufacture of good cheese and "Gilt Edged" butter. Bartholomew, Stewart Brothers, and a few others in this county and Kane, made cheese, long years ago, that superceded the noted "Western Reserve" and New York cheese. Mr. Israel Boies (a name honored by dairymen everywhere) may justly be considered as the pioneer in the manufacture of an extra quality of butter in this vicinity, where now so much is manufactured, and is so widely appreciated.

Dairymen of Illinois, your executive committee have outlined an extensive field for discussion on this occasion. Very few dairy topics have as yet received solutions that command universal assent. The field is wide and still open for both argument and experiment. In the same neighborhood several methods are considered best for feeding dairy cows. The causes and prevention of abortion, a very serious drawback to dairymen, remain unknown. The best methods of setting milk, still in dispute; the best breeds of dairy stock a subject of difference, and so on. Above all these topics, so useful, and necessary to be discussed, let us not forget to study to so manage this industry that its most noted product shall be a race of men and women noted for intelligence and worthy manhood and womanhood. Illinois is a great state—only in its infancy of development. I am proud of her past progress, and hopeful for a glorious future. I feel quite sure the dairymen of Illinois will bring no dishonor to its fame. One word more, and I give way to your regular proceedings. Dr. J. Woodworth, one of the members of the Kishwaukee Farmers' club, who was also a member of your association, and a worthy patron of both, and I may justly add, a man of science and a practical man as well, convenes with us no more on earth. I am sure we all duly appreciate his energy and suggestions in the cause of dairy improvements, and offer in this public manner our grateful tribute of respect to his memory.

In the absence of Judge Wilcox, of Elgin, who was to have responded to the address of welcome, the president called on Mr. Charles Baltz, of Chicago, who spoke as follows :

MR. BALTZ'S RESPONSE.

Mr. President, and Ladies and Gentlemen of Marengo : Allow me, in behalf of the dairymen here assembled, to thank you for the very kind welcome just tendered us. We have left our places of business, our shops and our farms, to come here and discuss with you questions of mutual interest in this our annual convention. And I hope that our coming here will not be in vain ; that this convention will be a grand success, as its predecessors have been ; that the discussion of these various questions pertaining to the dairy interests of our state, will result beneficially to each of us.

On my way out here from Chicago to-day, riding through the country lying between here and that city, I was strongly impressed with the thought that if this section of the country was properly developed it might yet be the greatest dairy country of the world.

I hope each one of us will do his best to make this an interesting and beneficial gathering. We can do so if we try. I had little thought of being called upon to respond to Mr. McD. Richards' address of welcome, when I came in, consequently I hope you will overlook any errors I may have made in my few rambling remarks.

The president, Dr. Tefft, then read the following address :

DR. TEFFT'S ADDRESS.

Fellow Citizens, Ladies, Gentlemen and Dairymen of Illinois : In accordance with a general custom which was early adopted and has been carried out from year to year, at our annual meetings, it devolves upon me at this, the sixth anniversary of the Illinois Dairymen's Association, to present to you a partial resume of our operations during the past year. The manner and purpose of our organization, the many advantages and happy influences arising from and extended by this and similar associations, and the progress made in the different departments of dairying

A. D. 1851

have been so frequently and graphically presented and discussed by others, at former meetings, that any attempt on my part to engage in the same could but be extremely irksome to you.

The year just passed has been one replete with fluctuations in the market price of dairy products. Butter and cheese have not only been very low in our markets, but have been unprecedently low in the European markets. We thought we had good reason for believing this would be the case in the early part of the present season, when we saw the great amount of poor butter and cheese in the commission houses, in cold storage, and piled upon the wharfs in the city of New York, last fall. To clear this market we expected much, yea, most, of this cheese would have to be dumped into the Atlantic ocean, to feed the dolphin and sea serpent. But, luckily, some of it was shipped to England, where it is said to have been used to feed swine and where it sold for nearly or quite enough to pay transportation.

We have simply invited your attention to the above for the purpose of showing in a measure the cause of the depression in the markets in the fore part of the present season. In our judgment this was largely due to our holding and placing too much poor cheese in the hands of the commission merchants during the warm weather of last year.

This season the dairymen have taken a different course, and we have no flooded markets this fall, although the production of cheese has been quite equal, if not in excess of, that of last year in our country. Had our cheese of last season been in quality such as to bear transportation to South America, we venture to say it could all have been sold at fair, remunerative prices, along as it was ready for market. Our exportation of butter to that climate is already very large, why should it not be so with our cheese? We answer—Simply because we do not take care to make a cheese to suit that market. If we desire to sell our dairy products we must cater to the wishes of the consumers, to a certain extent, at least.

The consumption of this article of food for man has largely diminished in our own country within the last two or three years; and why so? Simply because but very little good cheese is to be found in the market places.

It would seem that the home market, which should be the best of all markets, is largely if not wholly ignored by our dairymen at the present time.

It was claimed in 1876–7 that the consumption of cheese in this country was fully four pounds per capita. Were that so for 1878–9, our 47,000,000 people would require about 188,000,000 pounds of cheese for home consumption alone. But how is it now? We estimate a falling off of about twenty-five per cent. in the home consumption, reducing the amount required from 188,000,000 to 141,000,000 pounds and leaving a surplus on our hands of about 47,000,000 pounds. Now this is an item in marketing that nobody but the dairymen of this country has any power to remedy. The American people too well appreciate the nutritive qualities of good cheese, when taken into the human system, to discard its use, if such cheese can be readily obtained.

Last winter a bill was drafted and presented to our legislature, which passed the senate and came near passing the house, to recognize the Illinois State Dairymen's Association as a state institution, with power to establish and maintain an experimental dairy station somewhere in the state. One of the objects of such a station would be to examine, and recommend the raising, the best and most profitable breeds of cows for the dairy of Illinois. The United State census of 1870 gives Illinois 640,321 cows. It is now computed that the state has at the present time between 800,000 and 1,000,000. The estimated average life of a cow in the dairy is about six years. This holding true, it will call for the annual rearing of about 150,000 to fill the vacant places of valueless cows in the state of Illinois alone. This being correct, it behooves us as citizens, and especially as dairymen of Illinois, to look well to this matter of breeds for the dairy. Prof. Johnson tells us of a breed of cows that required nine pounds of hay to produce one quart of milk, and of another breed which required only five pounds. Now if this be true (and we have but little doubt of it from our own observation),would any gentleman within the sound of my voice hesitate for a moment, all other things being equal, which breed to select his cows for the dairy from? This is only one item of the use of such a station; although a very important one, perhaps not the most essential one to the dairyman. The fact that our creamery butter when first made is very fine and of excellent flavor, with an aroma not to be excelled by that of any other country's make on the face of the globe—although so nice when first made, it soon begins to lose its rich aroma and fine flavor, and more quickly becomes stale than the best dairy butter. This requires the most careful examination to find where the trouble lies, that it may be corrected. It has been estimated that the United States in 1878 produced 653,000,000 pounds of butter, and that Illinois is credited with one-fourteenth of this amount, which would give her 46,642,857 pounds. Now if by any means we can increase the keeping qualities of our butter, so as to realize one cent advance on the price per pound, it would place in the pockets of the dairymen of Illinois, per annum, the snug little sum of $466,428.57. What shall we say of cheese?

It is a well-settled fact that our cheese is not as compact but much more porous than English Cheddar, and does not hold its flavor as well and long as the English makes. It is also a demonstrated fact that our cheese contains more of the sugar of milk than their's and perhaps to this may be attributed the trouble. Some are disposed to charge our defect to climatic influences. It is possible and very probable we shall never know the actual cause of the trouble with either butter or cheese until some one makes a careful investigation of the matter, which is not likely to be done under our present dairy system. Therefore the necessity of a dairy station. Much more might be said on this subject, but time and space will not allow us to dwell.

The time was when we were taught that dairying must be confined to a strip of land from east to west a few hundred miles in width. This was and is a mistaken idea. Where good grass will readily grow, dairying may succeed, for the ingenuity of man may supply the other necessary articles. The dairy interest in this country west of the great lakes is being rapidly developed. Look at Wisconsin, with her annual production of millions of pounds of fine cheese, and Iowa, with rapid strides in the dairy business; while Minnesota, Nebraska, Missouri, Kansas and other western states are beginning to throw their mite on the wheel of fortune. While the foregoing and other states not mentioned may manufacture large amounts of butter and cheese and throw their products on the market, they are not largely your competitors only so far as our own country is concerned. We must look to Europe for the larger part of the competition which we are likely to meet. France alone exports to England more value in butter than the entire United States does in both butter and cheese. Denmark is also exporting a large amount of fine butter to England, and so, also, is Sweden.

We saw Swedish butter (if our memory serves us) at the New York fair, put up in something like a wash-tub and covered with two thicknesses of coarse cloth, which had been exhibited at a fair in Europe and then sent across the Atlantic for exhibition at the fair in New York. This butter smelled and tasted rather old on top, but was solid and sweet further down in the package.

This is the kind of butter that you have to compete with in the European markets, butter that is so made that it will cross the Atlantic ocean in a wash-tub and hold its fine flavor. England imports both butter and cheese from us to export to other countries. Now why should we sit upon our haunches with folded arms and allow England or any other country to import for the purpose of exporting our goods? Why not open our eyes to the situation and export direct to those countries, and save the commission through English hands?

The Hon. W. G. Laduc, commissioner of agriculture, Washington, D. C., informs us in his report for 1878, page 287, that fully three-fourths of our export of butter and cheese is to Great Britain. The balance is to British America and the West Indies. On further examination of said report, we find on page 292 a much fuller statement, giving the names of countries where we have exported butter and cheese, with the amount to each country. We have copied this for the purpose of correcting an error which has crept into some of our conventions in this state, as well as other states. We allude to dairy, as compared with other statistical reports. We here give a few of the exports for 1878:

COUNTRY WHERE EXPORTED TO	BUTTER.		COND'D MILK.	CHEESE.	
	LBS. OF	VALUE.	VALUE.	LBS. OF	VALUE.
United Kingdom	14,343,758	$2,650,570	$ 34,135	120,929,600	$13,759,385
France	27,268	3,188	....	3,400	364
Germany	2,854,128	434,595	132	47,476	5,986
Belgium and Netherlands	19,852	4,872	....	4,872	492
Other European countries	5,897	758	....	497	86
British America	1,158,924	208,756	3,488	1,651,726	180,368
West Indies	2,471,113	413,601	18,180	716,736	94,004
Mexico, Central and South America	563,791	126,202	9,957	307,864	40,120
Other countries	312,888	74,299	10,455	121,565	22,724
Australia	....	....	21,790	....	....
Japan	....	....	21,250	....	....
China	....	....	8,897	....	....
Total	21,837,117	$3,931,822	$128,284	123,783,736	$14,103,529

The amount of the cereals exported in 1878:

Wheat	72,404,961 bushels	$ 96,872,016
Wheat flour	3,947,333 barrels	25,095,721
Bread, etc.	14,392,231 pounds	730,317
Barley	3,921,501 bushels	2,565,736
Corn	85,461,098 bushels	48,030,358
Corn meal	432,753 barrels	1,336,187
Oats	3,715,479 bushels	1,277,920
Rye	4,207,739 bushels	3,051,739
Rye flour	6,962 barrels	30,775
Other grains	....	1,077,433
" " prepared	....	1,709,639
Rice	631,105 pounds	33,953
Total value		$181,811,794

The amount of cotton exported in 1878:

Cotton, raw material	3,391,795 bales, or 1,607,533,511 pounds	$180,031,484
" manufactured	....	11,438,660
Total amount	....	$191,470,144

We have made below an estimate of the milk used in the United States in 1878 for culinary purposes, on a basis of a population of 47,000,000 people, divided by five, giving 9,400,000 families. Now if we give each one of these families of five persons one pint of milk per day it will call for 1,175,000 gallons per day for the United States, or 428,875,000 gallons for the year. This, at ten cents per gallon, would come to $42,887,500.

Amount consumed as above		$ 42,887,500 00
Cheese	312,543,923 pounds @ 10 c	31,254,392 30
Butter	653,000,000 pounds @ 20 c	130,600,000 00
Condensed milk	3,600,000 gallons @ 10 c	360,000 00
Total amount of milk product in 1878		$205,101,822 30

RECAPITULATION.

The value of wheat, flour and bread exported	$122,698,054	
Wheat consumed at home, 1 bushel per capita, at $1 per bushel	47,000,000	
		$169,698,054 00
We estimate the dairy product to exceed the wheat by		$ 35,403,838 30
The dairy product of the country exceeds the entire exportation of all cereals.		
The exported cotton, manufactured and raw material, amounts to		$191,470,144 00
The dairy product exceeds the cotton export by		$ 13,631,748 30

In conclusion, we would most emphatically say that in our judgment the world is not over-stocked with dairy products, and more than that, we very much question whether it is ever likely to be so.

Look to the southern states in our own country and you will see they are not likely to become either good butter or cheese makers. The question is asked, Why not? We answer—Simply, because they do not raise the grasses necessary to do so. The spears of grass in some portions of those states are as scarcely seen as an honest politician in the country at large.

Think you of the many millions of mouths to be supplied with one of the best of foods for the human system; one that is universally received in its normal state by nearly or quite all of the mammals on the face of the earth. Cheese contains the nitrogenous and more or less of the phosphates of milk, and is better adapted to building up and sustaining the system than any other known solid food of similar cost. Butter is largely carbon, a substance necessarily called for and used by animals in sustaining the fire of life. You ask us how we know this to be a fact; we answer—by observation. Look with your mind's eye to the Esquimau who lives in the far northern clime, where the mercury congeals in the winter, and hardly thaws during the summer, who takes the oil blubber (which is largely carbon) and drinks it with as much gusto as our toper does a glass of whisky and with much happier results.

We believe it to be a duty that every manufacturer who is engaged in the manufacture of dairy products owes to himself, to make his goods of such quality as the market where he expects to sell demands. We see no good reason for commissioning perishable goods like butter and cheese.

If not saleable when ready for market at some reasonable price, it is far better to hold them in the factory, where they can be looked after and cared for, than to send them forward to commission men to be placed in store-houses or piled upon the wharfs of any city on the face of this broad earth. After once ready for sale they are never out of the way until in the hands of the consumer or actually consumed.

The exportation of butter, from January 1, 1879, to Nov. 27, has reached 34,705,284 pounds; the excess over last year for same time, 13,518,230 pounds. The exportation of cheese for same time is 120,366,857, a falling off of 8,638,316 pounds, as compared with last year, as per New York price-current report of Nov. 27, 1879.

On motion it was then decided to take up the topics in their order according to the programme, and

TOPIC NO. 4—"Has the manufacture of skimmed cheese had any thing to do with the depression in the price of dairy products?"—was taken up. Charles Baltz, of Chicago, was called upon, and talked a short time upon the subject.

CHARLES BALTZ: He was entirely unprepared, he said, to talk on the topic before the convention, though he had often been called upon to do so. Being a cheese dealer, however, he was willing to do or say any thing that would make an improvement in the manufacture of skim cheese. In regard to it having any effect on the market, he thought that the market was governed, mainly, by the laws of supply and demand. He would not take either side of the question, but would strike a mean between the two extremes. Possibly skim cheese, when made in the summer, may hurt the price; but if it is made properly it will always find a good market. Let it be made as it will, it will find a market. The dealer buys it because it is cheap, and the consumers buy it from the dealer because it is cheap, and these try and palm it off on their families for good cheese until they are sick of all kinds of cheese. His idea in regard to making skim cheese was that we should make a grade that would be beneficial to both the retailer and the consumer; then the trade would not be injured. Some skim their cheese on all sides, and then skim it in the middle. Of course such stuff will hurt the trade; it will always do it. He thought it would be well to discuss this matter pretty thoroughly. In some sections, skim cheese can be made to advantage; in others, it cannot. Those manufacturing cheese should try and keep up the grade. It should be kept up in order to increase our home trade. Make cheese that people will eat and you will always find sale for it. He had heard people complain that they could not get cheese fit to eat from retailers.

There was another thing he wished to speak about, though it was foreign to the subject in discussion. He thought farmers should be very careful, at that time of the year when the weather was soft, and not let their cows out on their meadows and pastures. There are always, in such weather, little green spears, that sprout up and are eaten by the cows, which lend their flavor to the cheese and butter. If the butter is not salted as it should be, they can be easily tasted. He had often detected these flavors in butter. They have a tendency to spoil both butter and cheese, and one cheese spoiled by them will do more harm to the market than many good ones will do good. He would recommend that in an open winter the cows be kept in the barnyard and not let run on the meadows.

He thought the milk-men should help the manufacturer in doing away with poor grades of cheese, by paying him a good price for his work.

In regard to boxing cheese, he would say that a cheese should not be boxed before it was cured. It stops curing as soon as boxed. There was a great deal said about salting cheese properly. Skim cheese required more salting than cream. You often find green spots in cheese—the result of poor salting. Get good salt and work it in well and you will find no trouble in preserving your cheese. Get good milk, make good cheese and put it on the market, and you will never be troubled with low prices.

R. M. Patrick: Said he would take the ground that the manufacture of skim cheese had much to do with the decrease in prices. Statistics relative to the consumption of cheese in this country and England, proved, conclusively he thought, that if we made a good quality of cheese our home consumption would be greatly increased. Our average consumption is four pounds per individual. In England the average is fourteen pounds. If we could get to where our average consumption was as great as this, we would consume more than we could manufacture in this country. He believed that if we would make good cheese our home consumption would be increased 100 per cent. He would take issue with Mr. Baltz on the subject of the manufacture of cheese. A little skimming does not injure cheese; but it is impossible to make good cheese out of milk skimmed too much. It is true, there is a demand for skim cheese. In the south, for instance, there is a demand for skim cheese, because the cream will not keep in a warm climate.

J. R. McLean: Thought Baltz carried the matter too far. Didn't think that herbs, such as found in our pastures, would hurt cheese at this time of the year or at any other. He had seen some very good skim cheese, and some very poor; some so poor that his family wouldn't eat it. He thought, like Patrick, that cheese a little skimmed was the best. In his opinion the greatest danger came from another quarter. We were making our cheese too hard. Some of it was so hard that it would make good car-wheels. In regard to the distinction between skim and cream cheese, he had seen his friend Baltz, on the Elgin board of trade, pass by good cream cheese and buy skim cheese right at the side of it. If this is done, how does skim cheese hurt the market? He didn't think it hurt it any. So long as the buyer can get skim cheese for much less than he can cream he will not buy the cream.

On motion of J. R. McLean the chair appointed a committee of three, consisting of J. R. McLean, T. McD. Richards and W. Boies, to draft resolutions relative to the death of Dr. Woodworth.

On motion it was decided to adjourn when they did to 7:30 p. m.

On motion of E. H. Seward a committee of three—R. M. Patrick, E. H. Seward and D. Wood—was appointed to act as a finance committee.

Charles Baltz, of Chicago, asked if any arrangements had been made with the railroad companies to reduce the fare for those attending the convention. On being informed that no such arrangement had been made, he remarked that if there had been any he was going to offer a resolution thanking the company.

On motion a committee, consisting of J. R. McLean and M. Switzer, was appointed to select judges to examine the butter and award the premiums. Dr. Tefft, the president, was later added to this committee.

On motion the convention then adjourned until 7. 30 p. m.

EVENING SESSION.

TUESDAY, 7:30 P. M.

Meeting was called to order at 7:30 o'clock, President Tefft in the chair. In order to accommodate R. P. McGlincy, who wished to leave the next morning,

TOPIC NO. 11—"The doings and acts of the Elgin Board of Trade"—was taken up. Upon that topic Mr. McGlincy read the following paper:

MR. M'GLINCY'S PAPER.

My paper on this subject must be largely composed of figures, and may therefore prove uninteresting to many; but the figures will have considerable bearing on the "doings" of the board, and will show what has been done by it since its organization in 1872.

At a meeting of the Northwestern Dairymen's Association, held in Elgin in January, 1872, I heard J. R. McLean and others speak of the manner in which dairymen were robbed by commission men to whom they consigned their cheese and butter. The drift of the speeches was about in effect like this: "We send our goods forward on commission, and, when we receive accounts of sales, they show that the cheese was either off flavor, too hard, or too soft, or they had huffed, or leaked badly, or were cracked; the weight did not hold out; 'they arrived just when the market was flat, and no demand for any thing, and, feeling that I must realize the best possible figure, I sold them, and inclose you check for the amount, less five per cent. commission.'" I may remark that it was stated the commission was always the same, no matter whether the goods were up or down, and it was a singular coincidence that goods nearly always went down when sold on commission, and up when sold direct to the dealer. Those were the days when the dairymen produced the milk, the factoryman the cheese, and the commission man made a profit from both without risking his own capital. But the organization of the board of trade happily changed, in a great measure, this state of affairs; still not as effectually as some of us had hoped, and still do hope for.

Such statements as those referred to could have been made by scores of men who attended that meeting, for they had felt the sting in a greater or less degree, and were, therefore, competent to serve as witnesses in the matter. But where was the remedy, and how was it to be applied? These dairymen were scattered about the country, some distance from Chicago, our then almost only market for *Western* butter and cheese, with their farms to look after, or their factories to superintend; so they could not attend personally to the selling of their products. They well knew that they were at the mercy of the commission men, and yet they had relief in their own hands, if they only knew it. There were some wise heads in that convention, and among them none more so than the late Robert Stewart, of McHenry county—a man ever ready to give his time, experience or money to aid in developing the dairy interest, or to assist in bettering the condition of his neighbors; and, although I am not positive, yet I am inclined to the opinion that he made the motion for the appointment of a committee to adopt measures for the organization of a board of trade at Elgin, then, as now, the dairy center of the Northwest. But a board of trade,—asked one of another, until the inquiry became general,—what good will that do? They, of course, had all heard of a board of trade, for there was one in Chicago, where wheat and corn, oats and rye, barley and flour, bacon and lard, and even money, were bought and sold, but a board of trade for the sale of dairy products was then beyond their comprehension. They had heard of "puts" and "calls," "blinds" and "straddles," "shorts" and "longs," "profits" and "margins," and "bulls" and "bears," but just what meaning these terms would have, when applied to a butter and cheese board of trade, they could not understand; for they had been accustomed for years to doing business on an entirely different plan, and were suspicious that they might not succeed as well with the new mode as with the old one, yet, like drowning men, they were willing to catch at any thing that would afford them relief.

The motion for the appointment of a committee prevailed, and the chair appointed R. R. Stone and C. W. Gould, of Elgin, R. W. Stewart, of Hebron, and Ira Albro, of Wayne, as such committee, which was afterward enlarged by the appointment of J. R. McLean and George W. Lake. These gentlemen met and drafted a constitution and by-laws, which were adopted at a meeting held at Elgin, March 1, 1872, and at the same meeting the following officers were elected: President, Dr. Joseph Tefft; vice-president, J. R. McLean; secretary, R. R. Stone; treasurer, O. Davidson. I think at the next meeting a few samples of cheese and butter (the latter private dairy) were exhibited, and a few sales were made.

I may here go back a little in the history of the board, and state that many who favored the organization felt that it would be more ornamental than useful, but the eight years of its existence have proved most conclusively that they were mistaken in their supposition. They inquired who would come to Elgin and buy their goods. By this move, if unsuccessful, they, or at least some of them, were fearful that the commission men would refuse to handle their products, and they would then be worse off than before. To some it looked like leaping from the frying-pan into the fire. Little did they dream that in two years Chicago, Cincinnati, St. Louis, Philadelphia, Baltimore, New York, and even Liverpool, England, would send dealers to their little inland city, to *buy* the goods direct from the manufacturers. But they have lived to witness the frequent visits of the representatives of the leading cities of the Union to the Elgin board of trade, in search of the best butter made in the world, and the best skimmed cheese that can be found. I say the best skimmed cheese, for I have heard dealers say that some of the cheese offered for sale was skimmed on the top and bottom, and opened and skimmed in the middle; so that would make it the best skimmed.

But to return. All of the books and papers belonging to the board, containing the reports of the sales made and the proceedings of the business meetings, were destroyed by fire in January of the present year, so I am compelled to rely on memory and the columns of "The Elgin Advocate," which publishes weekly a full statement of the sales and business of the board, for many of the facts and figures here given.

The first year the board was organized the sales of butter and cheese amounted to $81,000. Small as this is, it gave great encouragement to the friends of the enterprise, for, had this been disposed of in the usual way, the factorymen would have paid the commission men $4,050 for the privilege (?) of selling their goods. With this showing for the first year, all the factorymen who were within reach of the board became members, and aided in sustaining it. In 1873 the sales amounted to $219,177.53; 1874, $368,528.58; 1875, $496,220.04; 1876, $767,640.68; 1877, $1,059,085.08; 1878, $755,597.15. In the latter year there were sold 120,821 boxes of cheese, aggregating 4,897,346 pounds, and 1,113,955 pounds of butter. The falling off in sales in 1878 is due to the fact that many of the factorymen failed to report their sales. Had they been as prompt in reporting as they were in selling, the aggregate for the year would have compared favorably with that of the previous year. For the year ending with December, 1879, the sales amounted to $539,143.67. During this period there were 98,836 boxes of cheese, aggregating 3,648,314 pounds, and 977,879 pounds of butter, reported sold. Let us recapitulate, and see what the total sales have been since 1872, the year the board was organized, to December, 1879. We find that they aggregate $4,286,392.72. At five per cent. commission, the factorymen and dairymen, on that sum, would be out of pocket $214,319,63. Quite a respectable sum; and all saved by the board of trade, which has been maintained during the past eight years at a cost of $2 per member per year, a sum so trifling that none have felt it.

The question may be asked, Why do not all factorymen become members of the board, and share the benefits? In reply, let me state that but few factorymen in northern Illinois are not members of the board, having long since concluded that the advantages were far too great to be neglected. Our membership is scattered from Chicago to Pecatonica, and from the Wisconsin line, on the north, to the C., B. & Q. railroad, on the south, which scope embraces very nearly all the factories in the northern part of the state. Many private creamerymen and dairymen are also members, as well as the irrepressible commission men of Chicago, St. Louis and New York; and, so far as is known, all are satisfied with the board, and believe that its organization has been for the best.

EXPERIMENT STATION.
JAN
UNIVERSITY OF ILLINOIS.

I would not be a faithful chronicler of the "doings and acts of the board," if I failed to speak of its ups and downs in life; of the latter of which, however, it has fortunately had but few. The first year of its existence was but little more than an experiment. The following years showed that it was firmly established, and had become an institution of the land, and a refuge for all dairymen and factorymen who would seek its shelter, for its portals were ever wide open to the oppressed of both these branches of business.

In the year 1876 or 1877 a strong effort was made by several of the Chicago dealers to break down the board, but they signally failed. Dr. Tefft, the honored president, counseled the factorymen not to yield to the importunate demands to send goods on commission, but rather club together and start one of their number out as a salesman, with instructions to visit St. Louis and other cities, and sell their products there. But before the plan could be put into effect, St. Louis *came to us*, and we solved the problem of what to do with the cheese with little difficulty. Chicago dealers refrained from visiting the board for about three months, but, like the prodigal, they came back, even willing to be forgiven for their sins of omission. Since then they have been very peaceable, make very good members, and visit the board punctually every week. During the period referred to, while the dealers failed to visit the board, the factorymen were sorely tried, as were their pocket-books and the patience of their patrons, but *not the cheese they made.*

The organization of the board has proven beneficial in more ways than one. It has been the means of bringing the factorymen and dealers into a closer relation; through it factorymen have become acquainted with the prominent dealers in the leading cities; and, when the custom prevailed, during the early period of the board, of selling goods largely by sample, factorymen had opportunities of examining their neighbors' products and comparing them with their own, without being considered inquisitive or trying to steal the trade. And I would say that these comparisons have been highly beneficial; for I well remember one factoryman who complained that he could not get as much for his cheese as his neighbor, and he imploringly appealed to the president for advice. Nor did he appeal in vain; for the president quietly and kindly informed him that his cheese was not neat in its appearance; the bandage was put on in a haphazard manner, the box looked as if it was old enough to retire from service, and, to crown all, the cheese was dirty on the top and side. This factoryman was shown a few bright samples from other factories, and told to imitate them. He took the hint, and in a month could show as fine cheese as any one on the board, and he continues to do so to this day. He obtained better prices, and not infrequently sold his goods from a half cent to a cent higher than any other. It has been beneficial to those dairymen who make their milk into butter at home, by enabling them to obtain better prices for their goods than they could possibly have done had not the board been organized. The establishment of the board has given manufacturers a market at home, and at as favorable prices as they could obtain elsewhere. It, in a measure, establishes the price of dairy products for all the country west of the Mississippi, and frequently New York quotations are not made until they get the returns from Elgin.

It seems to me that every producer of milk who lives within a convenient distance of Elgin should become a member of the board, and then they should attend its weekly meetings, and moreover I believe it would be to their interest if they would require the factorymen who make up their milk to sell the products on the board, instead of commissioning them, as has too often become case of late.

Perhaps the uninitiated may wonder what is meant by the "irregular sales" which they see reported from week to week, and which almost invariably outnumber the "regular sales." Well, these are the sales which have been made on commission, and are reported when the returns are made to the factorymen.

After the loss of our books, papers, etc., in January of the present year, the board organized under the state law, obtaining a charter, and became an incorporated body. We have by-laws and rules governing the members, and when one feels that he has been wronged he can appeal to the powers that be, and justice will be meted out to those who violate the law, if they can be detected. Since the organization of the board, there have been but three or four trials, for violation of the laws or contracts, thus showing that we are quite a law-abiding set. This year we have a membership of one hundred and thirty-six, which is considerably more than we have ever had before, but we do not want it to stop here, but want all dairymen, all factorymen, and all dealers to join us, and, by so doing, aid in keeping Western, and especially Illinois products, in the first rank of the leading markets where they are sold.

Factorymen who deal on the board have opportunities of becoming posted as to the state of the markets in all the leading cities, save Chicago, which, however, is so remote from us that the quotations might become stale before they reach us, hence we do not post prices on our bulletin board from that town. We also receive a regular telegram every Tuesday from New York city, giving us the state of the market there for the previous day. Thus the board endeavors to inform the members of the state of trade in the different cities, but once in awhile factorymen become independent of these sources of information, and some "fly" dealer picks them up, and buys their product at figures below the market price. Being bitten once, they afterward try to steer clear of such breakers.

The meetings, as a rule, are quiet and orderly, and a stranger, unacquainted with our way of doing business, would imagine that we never get up a boom in butter and cheese; but it is said that still waters run deep, and the days we have the heaviest sales we have the least noise; in fact, when there is business on the board, there is no time for noise or idle talk.

It would require too much time to give the *personnel* of some of the more prominent members of the board, although I believe it would prove highly interesting to many, and perhaps at a future meeting I may give a pen picture of the bulls and bears of the Elgin board of trade, and thus complete the "acts and doings" of that now famous institution.

In conclusion, let me call your attention to a tabular statement of the sales, by months, during the year 1879, together with the average price of butter and cheese; the highest and the lowest price of each. To some these figures will be an important study, and, I believe, will be of interest to all:

MONTHS.	CHEESE.		AVERAGE PRICE.	BUTTER.	AVERAGE PRICE.	TOTAL SALES.
	BOXES.	POUNDS.		POUNDS.		
January	854	29,775	5¼	35,758	30½	$ 12,238 20
February	640	22,400	4⅞	16,606	26	6,165 66
March	1,300	47,900	5⅓	31,870	26	10,111 39
April	1,835	67,350	5¾	16,211	22½	8,096 49
May	5,660	214,346	5¼	51,325	16¾	20,122 71
June	8,860	324,525	5½	70,285	16	29,081 24
July	5,825	206,475	4¾	48,022	15¾	27,452 54
August	14,694	506,391	4¾	156,053	17½	50,133 50
September	13,121	462,704	8	196,348	22	73,474 16
October	9,892	373,785	10¾	88,362	28	68,371 21
November	16,404	689,276	11¾	133,321	37	115,153 91
December	19,561	704,387	10¾	141,280	34	109,742 56
Aggregate	98,836	3,648,314		977,879		$539,143 67

Lowest price for butter, 14¼c.; highest, 40c. Lowest price for cheese, 3c.; highest, 12¼c.

[Mr. McGlincy having kindly tabulated the sales for December, they are shown with the rest, thus giving an aggregate for the year.—SEC'Y D. A.]

J. R. MCLEAN (called upon): Said that Mr. McGlincy had so completely covered the ground there was nothing left for him to say. He would illustrate in a different way, however, that might be more easily comprehended, the amount of business done by the board of trade. There had been 1,535 car-loads of cheese and 221 car-loads of butter sold on the board of trade and shipped from Elgin and vicinity since the organization of the board. These figures, he thought, might be remembered more easily than the other.

The question discussed during the afternoon—No. 4—was then brought up again, but no one responded to the president's invitation to speak upon it.

QUESTION No. 5—"What can be done to prevent the slaughter of dairy products during the summer months?" was next brought up.

McLEAN: Said there were two ways to prevent the slaughter of dairy products in summer. One was, to make a good article, that would sell quick; the other, was not to make any at all.

Several calls were then made for C. C. Buell, to which that gentleman responded as follows:

C. C. BUELL: He was not interested himself only in the manufacture of butter. Had learned by dear experience that making butter to keep for higher prices was not profitable. He thought butter might be made through the summer so that it could be kept sweet, but it can't be kept so that it will be as sweet as new butter. Had tried keeping some in air-tight boxes, and had kept it sweet. Had sold this for twenty-five cents per pound, in Chicago, but it had gotten a flavor which he didn't like. He preferred trying to keep butter rather than sell it for fourteen cents per pound, but he hadn't sold any the last summer for less than seventeen cents. However, he would rather make butter that would sell for eighteen cents than to make some to keep over. In regard to cheese he had had no experience. Had tried to become interested by reading some articles written by Prof. Arnold. Had received a letter from the professor describing his process, but he supposed all understood it well.

MR. STONE: Would like to ask Mr. Buell the price of other butter when he sold his for twenty-five cents.

BUELL: Twenty-seven and twenty-eight cents.

R. M. PATRICK: Would make but a few remarks. Thought the subject a very important one. One year ago the experiment of cold storage was tried in Chicago and

New York, and he considered it somewhat of a failure, because it had not been tried this season. The experiment of keeping cheese, as they are made now, must be a failure, or nearly so. Large amounts of cheese had been kept, however, and sold at good prices. This had also been true of butter. Thought if butter was properly made during July and August it might be stored at a good profit until fall; but it must be made in houses prepared for it. Many have done well at this, but all must not take it up. Large lots were ruined in this way in the year 1878. It is a well-known fact, though, that the article is never so good as just after being churned; the fine aroma is not preserved, and the buyers are getting so particular that if butter is two weeks old they want to get it for two cents less per pound. Cheese that is properly cured is in its best condition. Peoples' tastes have changed so much in the last few years, that old cheese is almost worthless; yet cheese can be stored so as to prevent this depreciation in summer months, but if all is stored the markets will be glutted in the fall. The best way was to market the greater part of both butter and cheese during the summer months; then a good profit could be realized during the summer.

MR. STONE: Said he had heard how to keep cheese, and now he wanted to know how to make butter to keep. He had come to learn.

MR. BUELL: Said he would like to know how they made butter in Marengo; but in answer to question, however, would say he didn't believe butter could be made to keep, the temperature of which in making was too high—that was soft in making. If kept so cold that it was hard all the time—hard enough to work well during the whole process of making—he thought it would keep. Thought the temperature never ought to be higher than from 60° to 62°. In summer not over 60°; in winter not over 64°. Would like to hear Mr. Baltz's ideas on the subject.

MARTIN SWITZER was then called on. Said he wasn't in the habit of making speeches and preferred to hear Mr. Buell; but if any one had any questions to ask he would be glad to answer them. His experience was, that if you heated cream over 60° or 65° you destroyed the aroma and destroyed the keeping qualities. He thought the greatest danger in making butter was when it was just coming. You may spoil it then in a few minutes. Thought Buell had set the temperature a little too high. He had churned and made butter at as high a temperature as 64° and 65°. This was in a cold room. He thought butter gathered in the churn would make better at 62° than at 64°. He had made it at a high temperature.

C. C. BUELL: Had attempted to get at a perfect process of churning butter, and had almost succeeded in getting it. He gathered his cream and commenced churning at 58°, and before he finished it would be up to 64°.

SWITZER: Thought, as a rule, that the temperature was not lowered soon enough. He thought the time to do this was just as soon as you could detect particles of butter. He would reduce the temperature then to 60° or 62°. The addition of ice was objectionable, but not of water cooled with ice. He believed that any substance once frozen or boiled would never regain its former condition. He had made but little butter out of milk; he made it out of cream. Cream at no time should be kept over 48°; he would rather have it less. He had kept it at 72°, but didn't think it was right. Never wanted his cream over 65°, to be good.

BUELL, in answer to a question asked him, said his experience was that cream should not be kept long after skimming. There was, he thought, no work so poorly done in the factories as the churning.

MRS. CHURCH was called upon, but she replied that she was not in the habit of making public speeches, and besides, it was a good while since she had made any butter and cheese; she would rather listen to others.

W. W. BINGHAM: Said it was useless to attempt to go by the thermometer, entirely, in the manufacture of butter; our observation would tell us when to churn. Thought the best quality of butter could not be made by rule. It had been said that any one can make butter and cheese, but he had found out differently. The longer you make it the less you think you know about it.

BUELL: In answer to a question asked him, Buell said that he set his milk in open setters, but was not so particular about that. Low temperature was the best, always. He kept his 54° in summer; in winter, if it kept below 60° he was satisfied.

W. W. BINGHAM: Said his experience in setting led him to the belief that setting in cold water in tanks, closely covered to keep out all foreign substances, was the proper way. The colder the water set in, the better the quality of cream, and the quicker it would rise. He had tried the Cooley process but didn't like it. In this process the milk was placed in the cooler warm from the cow. Necessarily the vapor condensed on the top of the can. It was well known, he said, that cream was one of the most sensitive substances to catch odors that existed, and would of course, in the Cooley process, absorb all the animal odors arising from the milk. He said you could not always get same results from same experiments. By his plan of setting—the submerged plan—butter could be made that would keep, and by it cream would rise quicker and higher. He thought milk was one thing and butter another, and temperature separated them; and the lower the temperature the greater the difference. He thought we could not be governed wholly by the thermometer. He worked his butter but once. Salt is never thoroughly diffused through the particles until it is all dissolved. If he was making the amount of butter they make in factories, he would work it in a different manner. He washed his butter until the water came from it clear. He didn't know as it was any improvement to wash with brine.

BALTZ: Thought butter made by using the submerged process didn't keep so well. He thought there was no rule by which the details of butter-making could be followed. You must be governed by experience. The Cooley process of raising cream he didn't think was good, because you keep every thing in the can that should be allowed to go off. Butter made this way wouldn't keep. The great secret in butter-making was to take out this animal heat. He thought the best way was to set in open cans and let the animal heat pass off as it should, and then you can use your judgment about how to proceed after that. He had had butter come into his market that would keep for months, and some that wouldn't keep at all. Some that he got keept all right, and marketed all right in the fall. He wanted butter that he could ship any where. If butter was to sell in Europe, it must be of the best quality—made to keep. He thought we could not dwell too much on this making of butter.

BUELL: Thought a wrong impression had been created about the use of the thermometer. Thought good butter could not be made without the use of the thermometer. He would stick up for the thermometer, first and last. In winter we need it to know when to start our churn; you all know how it is. He had made good butter at 85° and 90°. When he knew how the mercury stood then he was all right to go ahead. He thought it a very important aid in butter-making.

BINGHAM: Said he wanted to make an explanation. He didn't mean that we should do without the thermometer, but that we needed experience as well.

BUELL: Had seen butter made without working, just as good as that made by working. His rule was, as soon as the cream began to slush, thus denoting that the butter had come, he put into the churn a pail of water. This helped the butter to gather quicker. As soon as the butter became fairly separated, and looked like granules of sugar, he quit churning. You spoil butter when you churn too much. Draw out in ordinary manner. He got the butter in lumps the right size, then drained the butter all it would drain. To a sixty-pound churning he then adds one pail of strong brine, turns it, and then puts in another lot of brine; and usually, if it is strong enough, you can pack the butter at once. He remembered one time that he thought he hadn't salt enough in, and found the fresh aroma destroyed. He used Hanson's coloring; others were good. Used Higgins' salt, because it was more easily dissolved than Onondago. He had used another brand. Wanted a salt that was easily dissolved. You could see by his mode of making butter that it must dissolve easily.

On motion, the convention then adjourned until nine o'clock Wednesday morning.

WEDNESDAY—MORNING SESSION.

The convention was called to order by the president at ten o'clock.

On motion, W. W. Bingham and Mr. Gilbert were added to the finance committee.

The president suggested that the finance committee, in taking the names of members, be careful to get the name and address plainly written so that there would be no mistakes. He also announced that he had in his possession a paper by I. H. Wanzer on the subject discussed the previous evening.

On motion, Mr. McGlincy was instructed to read Wanzer's paper, which he did, as follows:

I. H. WANZER'S PAPER.

Mr. President: "What shall be done to prevent the slaughter of our dairy goods in the summer months?" is a question that has been discussed from time to time, under different headings, in most of our dairymen's conventions ever since they were first organized, and we believe much good has resulted from the same. But never in the history of associated dairying has the necessity of some radical change been so forcibly impressed upon the minds of dairymen as in the past season. It has positively come to the point where we have got to do some things differently or abandon the business.

In this paper we will briefly call the attention of dairymen to some reforms that it would seem easy to put into successful operation. First, we mention the oft-admitted fact that we are making too many of our goods in the summer months. This over-production can, we believe, be easily and profitably abandoned in the West. With the expensive feed and long winters of the East, they can never compete with us in the manufacture of butter and cheese in winter. And now, as the tastes of the world are for strictly fresh goods, we find, in order to supply this growing demand, we must milk more in the winter months; and when we consider the fact that the West must fill this demand for at least one-half of the year, we are insured a profitable outlet for all we can make. Our past experience in winter dairying is, we think, convincing enough that the winter months are the months to make the heft of our goods, thus helping to equalize the markets of the world. We believe that it is more from the force of habits inherited from the East than any thing else that the West, as a whole, is clinging so close to summer milking.

Second, we mention the oft-repeated fact that we must make our goods better. Much of our summer product is made worthless through the carelessness and incompetency of butter-makers and cheese-makers; and we think that, since the abandonment of buying milk at the factories, poor goods are on the increase. Manufacturers should be held strictly responsible for all goods made from milk entrusted to their care.

Our curing rooms for cheese, in the main, are greatly at fault. Most curing rooms are built by only siding up the outside and plastering the inside. These rooms neither resist heat nor cold. In two of the factories under our charge the curing rooms are built as follows: First, they are sheeted with good lumber on outside of studding; then furred out and sided; then furred out between studding on the inside and papered with good building paper; then furred out and lathed and plastered between studs; then lathed and plastered again outside of all, making four dead-air spaces. In these rooms cheese will keep their flavor, if well made, from four to six weeks longer than in rooms built in the old way. In a business of 5,000 pounds of milk daily these rooms will save the extra expense of building each month, for four of the summer months.

Our butter must be made better. There are many things in the summer months at war with us in our attempt to make good keeping butter. It requires the greatest vigilance to keep our factories in condition so that our cream may raise in a sweet atmosphere; and this is made more difficult from its close proximity to the cheese-making room. Let us so control matters that our milk, whilst setting for cream, shall be in a clear, sweet room, and, when this is done, followed by all the requisites of good butter-making, we will have butter that will keep a reasonable length of time and still meet the requirements of the trade. When made, we should at once make up our minds whether we want to put it upon the market at the ruling prices, or hold it for better. If to be sold, get it into the market just as soon as possible. Sell at what you would consider a low figure, at home, rather than put it into a hot car to go a long distance to the place of your commission man, exposed to delays and heat between cars and store—"alll at your risk,"—and after being received in store not cared for in a proper manner,—for but few mortals will care for the goods of others as though they were their own. If we should think it better to hold for better prices, put it into the nearest cool, clean, dry cellar, with good strong brine covering top; preferring this to the damage incurred in transit and the expense of what, in many instances, proves to be worthles, damp, cold storage.

Then again, it seems to us that we have fallen into a system of marketing our butter and cheese which if persisted in will work ruin to this industry. Chicago is our natural distributing point, and its commission men, recognizing this fact, have taken advantage of it and entered into combinations compelling the manufacturers to commission their goods; and so well are these combinations held together that we can never sell outright unless there is more to be made for them. The time was when the keeper of the cows sold his milk to the manufacturer and the manufacturer sold his goods to the dealer, but now the producer of the milk commissions his product to the manufacturer, and the manufacturer commissions the goods to Chicago dealers, and Chicago dealers commission the goods to dealers in New York, and the dealers in New York commission them to parties in Liverpool or Glasgow; and all the breakage, leakage, shrinkage, freight, cartage, and the three or four commissions, come out of the producer of the milk—and no wonder small dividends follow. If we are to consign our goods, let us get just as near the consumer as possible. The time has come when any man of common intelligence can open a correspondence with good men on the other side, and will find it just as easy to ascertain their financial worth as that of a Chicago or New York man; and unless we can get fair play from our men at home we can leave Chicago men out in the cold.

In conclusion, I would express a hope that the present session of the State Dairymen's Association may have its influence in favor of an increase of winter dairying, as well as for the making of better goods and a reformation in our ways of disposing of the same, thereby to encourage and foster the great industry of dairying.

QUESTION No. 6—"Will it be more profitable for the dairymen of Illinois to follow dairying exclusively for the next few years, or diversified farming?"—was then taken up.

C. C. BUELL read the following paper on this topic:

C. C. BUELL'S PAPER.

The apparent tendency of all industrial enterprise at the present period is toward specialties in production. It seems hardly necessary to take any time to prove this proposition, or even illustrate it. We see it in the spades we dig with, the hammers we pound with, the plows we use, the wagons we ride in, the clothes we wear, etc. The items of almost the entire list of manufactured products proceed from establishments which make specialties of some leading article or articles. So in merchandizing, and in professional pursuits as well, when we look for the causes of this, we find some of them in the increased use of improved machinery, by which the various cheap moter powers are made to take the place of skilled manual labor, thus turning out a greatly increased number of articles designed to meet human want, at greatly reduced cost, and in a style, as a rule, much better adapted to please the taste.

The cost of transportation has been made so small (as it should be with present facilities) that it matters little to the consumers whether an article is produced in Oregon or Maine. A general equalization of values has thus been produced so far as locality is concerned. The controlling elements in the problem of production have come to be, technical skill and capital, coupled with natural facilities, such as climate, adaptation of soil, cheap power, presence of the raw material, etc. All these things are in the line of economical division of labor and are the mark of progress in civilization itself.

The question for discussion here is, do the various branches of the business of husbandry fall under the same law, and especially is the business of dairying in the immediate future and considered as to its rewards and profits, to be most advantageously pursued as a specialty, or otherwise in connection with diversified farming? I do not hesitate to take the position that the law referred to does apply, with proper limitations, to the various branches of agricultural industry and to dairying in particular.

It will be noted here that the question is not whether dairy farming will be profitable the next few years. That is an entirely different and separate question. But assuming that there will be any profit at all in the business, I believe it will be greater if pursued under favorable circumstances as a specialty; and further, this special attention to it may make all the difference there is between a losing and a profitable business. The day is past when the dairy of five cows, in connection with mixed farming, can compete economically with the dairy of fifty cows, the natural facilities being the same; and the question is by no means settled that the dairy of fifty cows, operated distinct and alone, can compete economically with associated dairies of five hundred or a thousand cows, the same skill in the various details being brought to bear in both. The same principles apply here that apply to other branches of industry. The consumer of dairy products has advanced in this direction as he has in others. He demands a more finished product —a product of greater artistic skill. And his demands are inexorable. He is able to pay for it and he will have it. The manufacturer who is able to meet this want "takes first money," and is likely to reap the greatest profits.

Skill and capital are brought into use advantageously here as in other branches of industry. Capital is required to procure the facilities for producing the best product as well as a given quantity of it at the least cost. Skill is acquired by careful study and practice on the part of a capable individual, and this becomes economically possible only when operations are large and the products considerable in amount. Compare the product of milk strained into six-quart crocks or pans, set on the bottom of a cellar, churned by hand in five to fifteen pound batches, either by the housewife, milkmaid, or the proprietor himself, worked with a paddle or ladle, put into rolls of one to five pounds and neatly marked, rolled up in a napkin or piece of old cotton garment, and taken to market along with a few eggs and vegetables, perhaps—compare, I say, this product, both as to quality and cost in labor, with the product of an associated dairy enterprise, and you have the extremes of the economic view I would like to bring before you, so far as quality and cost are concerned. Now consider the relative rewards probably received, and the contrast is complete. Now every small dairy approaches more or less near the unfavorable extreme I have described, *as to the cost of the product in labor.* The quality of the product may be, and sometimes is, equal to and even superior to the product of the large dairy or the associated dairy; but this is not usually so, and is liable to be so only at the cost of greater expenditure in valuable labor. Circumstances may and sometimes do warrant this; but this is the exception and not the rule.

I have no doubt, therefore, that dairying as a specialty is far the most profitable form in which this business can be engaged in. Of course, it is better to market the butter produced on any farm, over and above home wants, rather than waste it; but not much profit for labor is likely to come from this source.

The above conclusion, however, does not imply certain things, and it does imply certain other things. It does not imply that any kind of a farmer, on any kind of a farm, with any kind of cows, with any kind of management, can, by making dairying a specialty, "pay off the mortgage" and achieve success. It does not imply that the man, who thinks he knows it all to begin with and who does not master his business, will make dairying profitable. It does not imply that the farmer, with land especially adapted to grain raising and not to grass, with water scanty or poor, will succeed.

It does imply that the dairyman shall have a liking for his business and shall master it in its details. He shall not be afraid to roll up his sleeves and go to work himself. He shall take the dairy papers, attend the dairy conventions, impart and receive knowledge, learn to distinguish a good and profitable cow, know the comfort of a seat on a milking stool, and not get mad if butter from the same churning don't take both first and second prizes in the same class. "The wind bloweth where it listeth," etc. He should know enough not to put colts and steers and cows into the same pasture and yards and expect a profit from the cows. He should have eyes to see that by letting a lot of hungry hogs run with his cows, in order to save the droppings, he does not give his cows a minute's rest for turning feed into milk. It implies that the dairyman has a farm which is either excellent for grass or otherwise adapted to produce both grass and grain. In the first case he may profitably, as a rule, buy more or less grain to supplement his grass, and in the latter case he would probably feed the grain he raises. It implies that the dairyman does not live either in Alaska or Florida, if I am rightly informed about the climate of these two localities. In short, it implies that there is a general and intelligent adaption of means to the end to be accomplished.

As to the future, I never considered the foresight of the person, who claimed to see far into it, established. He sometimes pretends to see a long way, but usually, like the cross-eyed girl, acts as if looking somewhere else. There undoubtedly will be *ups* and *downs*—mostly *downs*, probably, as it will appear to each one with respect to his own business. There is no more prospect of free trade in money than of free trade in general. Money will not be allowed to become in fact as practically in law a commodity as well as money, nor will it be permitted to perform the simple duty of exchange, useful for currency, but comparatively useless as a commodity merely. The banking function, so called, would be interfered with. A whole class of money *issuers* would thereby lose their occupation.

There is no probability of another war to send butter up to fifty cents per pound and more. The Boises, the Wanzers and the Elginites are not going to sell their butter for ten cents a pound more than the rest of us can get. *They will have to ride in the omnibus.* We doubt whether the dollar-a-pound customers are to increase, but the consumers of good butter will, and there will be more of it. The dairyman's dish will not probably be always right side up; but if he be neither fickle nor foolish, he may catch his proportion of the shower. Yes, dairying to succeed is to dairy persistently, to dairy intelligently and three hundred and sixty-five days in a year, and one day more in leap-years, and *to dairy as a special business.*

W. W. BINGHAM: Said the question had been discussed in a little different light from what he had thought. He believed no business should be followed, if not followed thoroughly. The question was, Is it going to be profitable if followed the next few years? He thought the experience of the past few years had taught us a lesson. The business was but in its infancy. Many were classed as dairymen who were nothing but milk-producers, who did not profess to know how to make butter and cheese. These, of course, followed the co-operative plan. The profits to be derived from any business are from what you have above cost of production. He thought the dividend plan of making butter and cheese had a tendency to decrease prices. He thought if this plan was followed out it would always glut the markets as it had in the past. This glutting had a tendency to diminish prices. It was putting the profits of the business into another's pocket. Thought in a few years this business would get down to where the dairymen would either sell their milk outright, or make it up themselves, and learn to sell it out and out and not put it into the hands of commission merchants. He thought if we would do away with this dividend system of making up our products, our profits would be increased, because of the quality made, and less of it. We could judge of the future only by the past, and he thought he could say, without being successfully contradicted, that those who have been getting rid of their milk by the dividend plan hadn't made a cent in the past few years. The dividends had been down to forty and fifty cents, which didn't pay expenses. He thought this dividend question was one which should receive the careful attention of every dairyman and others interested in the matter. Dairying in the future would be formed upon a good, sound basis. He thought, however, that diversified farming was the best, from the fact that you were the least liable to failure, because you had two or three things to fall back on in case of an emergency.

KINGSLEY: Thought diversified farming was the best. Some bought their cows, and others raised them; this varied much in different localities. He thought if a man had a small farm he ought to keep to dairying exclusively. He thought, however, for the sake of the land, he ought to change. He had been a dairyman a good while.

MR. SEWARD: Said the question should not pass without more talk. Diversified farming was the question which had to come, sooner or later. He was satisfied that we mowed and pastured our land too long. Manuring land would not produce the quality of grass that you could get if you broke it up. Our land seemed very well adapted to raising clover. He had seen pastures that had never been broken up, and he thought from them you could get a larger crop than from older land. Foreign grasses would come in. About it being more profitable, he thought the dairymen of Illinois should follow mixed farming. He thought if every farmer would try and raise some stock and raise more grain than he needed he would be better off. He thought exclusive farming not so profitable. Thought farmers should raise a few calves and keep up their dairies. He thought one good breeder kept on the farm was a good thing, and unless we raised some stock like this, every little while, we must go to others and buy stock and pay big prices. He thought, too, that we should raise root crops;

the larger the better. He thought farmers should raise a little of every thing. You could get more out of your land this way than could those who made dairying a specialty.

CALVIN GILBERT: (On being called upon)—Said he would rather let his friend McGlincy talk; he could interest an audience better than himself. He thought the question was of much importance. Had been in the dairy business for 15 years and he didn't know as he had gotten very rich out of it; but he believed he had done as well at that as he could at any thing else—any other kind of business. He had been traveling in the West and had not seen the wealth he saw at home. Compared with the South, also, we were much better off. He wished to digress a little. His idea of the dividend plan was, that it was the right plan if run rightly; but, as all knew, the making up of milk had been in a way not at all satisfactory to our dairymen. Our milk and money had gone out and we had received so many cents per hundred. This plan had been run too loosely to give satisfaction. When he was receiving thirty-five and forty cents per hundred for his milk he thought he was throwing it away and he had made a private creamery. The factories, though, were at present paying good dividends. He had a contract for butter, made in his own dairy, for thirty cents per pound, clear, in Chicago. Thought dairying was the business if you could keep your cows up all right, though you must have your ups and downs. He knew that this skim cheese was ruining the trade. This part of the state, he thought, was adapted to dairying. Further south there was no water and it made it impossible to dairy good in the southern part of the state. If you were in the business, to keep at it, and you would come out all right.

In answer to a question: He made one pound of butter from twenty-five and a quarter pounds of milk. He had heard of more being made, but he would like to see it. He had been told by a dairyman in Chicago that he was making four pounds of butter from one hundred pounds of milk. He fed corn and oats, and thought it was better to grind all together. He set his milk in pools in deep setters for forty hours; in warm weather, twenty-four hours. Let it get a little sour before skimming, but usually skimmed just as the milk was changing. When he started it took twenty-seven pounds of milk to make one pound of butter. He had found it took just one and three-quarters pounds more of milk in June than in October to make a pound of butter.

Bartlett: Found a little over one pound difference between summer and October milk. He had always found a good deal of difference in these two seasons, but it was probably in the feed. He let his milk stand thirty-eight or forty hours; about the same at all times of the year. Was getting at this time of the year about four and one-half pounds of butter to one hundred of milk. He had gotten from fifteen to thirty-three cents for his butter. Weighed it as soon as it came out of the churn. He shipped to Chicago.

J. H. Foote was then called upon: He set his milk in warm weather by putting in pans. He had made in October a little less than four pounds of butter to one hundred pounds of milk. In November he made one pound of butter from twenty-one of milk. He had fed bran, corn-meal and corn in the shock.

O. S. McAllister: Thought the dairy business needed experience and close attention. He thought if a man went into dairying he needed to do that exclusively. If you got to raising other things you couldn't give dairying the attention it needed to make it profitable.

On motion of Mr. Baker a committee consisting of Dr. Tefft, R. M. Patrick and C. C. Buell was appointed to meet Governor Cullom, who was expected on the noon train. L. Bartlett was later added to this committee in place of C. C. Buell, who was unable to serve.

QUESTION No. 7—" Is it advisable for dairymen to continue in the business ? "—was then taken up.

The president called on J. R. McLean, who was down on the programme for a talk on this subject.

J. R. McLEAN : Said the former question had so completely used this one up that there was nothing left for him to say. He would have prepared a paper on the subject had he not known that the former qustion would necessarily cover the ground. He remembered, in connection, the old maxim—" Every body gives advice and few take it." He thought this question must be left to each man who was in the business. Every man knew whether he had been doing well the past year and whether it would be profitable for him to remain in the business. If a man had a factory close by, run on honest principles, it would probably be a good plan to keep at it. He had talked with quite a number of well-known dairymen on this subject and had concluded that if it was not for the recent boom dairymen in general would have had to sell their dairies to buy bread for their families ; but things are better now. He was satisfied with what he was getting for milk ; but if he had not had something else to fall back upon he would not have been there, nor would he have been able to raise the dollar necessary to become a member of this society. He thought, while McGlincy was reading of the immense amount of dairy products that had been sold on the board of trade, he would like to ask where the the money had all gone. If we had received it, what had we to show for it? Providence and the prosperity attending business had made times a little better. God had sent dry weather the past year that we might get good prices for our products. And the president had read how our exports to Europe had increased; all of which has had a tendency to better the markets; but would we dare to depend on these next year? He would digress a little: He believed in diversified farming. His idea had been for years that a man could make it the most successful. He kept twenty cows on one hundred acres of land. Beside these he could raise a few calves and a few colts. He supposed that was called diversified farming. Kept a few turkeys and chickens and other fowls. He knew a man named Rohlston, who lived on Henry Sherman's farm, near Elgin, who sold $1,800 worth of sweet corn the past year, and spent every cent of it in buying feed to keep his dairy of seventy-five cows. His neighbor, Larkin, had made money in the dairy business—he could make money at any thing. He would advise dairymen to go slow. It had been suggested that the business would get down to a solid basis before long, but if ever the business got lower down than it had been, God help us! Some one had spoken about home consumption of dairy products. The trouble there had been that the dividends paid by the factories had been so low that the patrons couldn't get money enough to buy cheese. It wasn't all in skim cheese. It wasn't all in under-consumption. What was to be done? Go into mixed farming? He would advise again to go slow. Raise some calves, raise some pork, and if your cheese spoiled before you sold you had something to fall back upon; but to draw your own conclusions whether it was better to keep it up.

On motion of C. C. Buell the following greeting, signed by the president and secretary, was ordered sent by telegraph to the president of the International Dairy Fair, then in session in New York:

F. B. Thurber, President International Dairy Fair, N. Y.: Illinois State Dairymen's Association, now holding annual convention at Marengo, Ills., sends greeting, with best wishes for success of Second Annual Dairy Fair.

The committee appointed to draft resolutions relative to the death of Dr. Woodworth, then reported the following, which were unanimously adopted:

TRIBUTE OF RESPECT.

WHEREAS, This association learns with deep regret that the All-wise Creator and Ruler of this universe has in His Providence removed from our membership, since our last meeting, our esteemed co-laborer, Dr. J. Woodworth, a gentleman who, by his many good qualities of heart and mind, endeared himself to his family and friends, and to strangers as well; and one who in all his intercourse with his fellows exhibited the true spirit which should ever characterize man in all his dealings; as a dairyman he occupied a position in the front rank of his profession and was ever ready to impart information to others, believing in the injunction "Let your light shine" so as to benefit others: Therefore, be it

Resolved, That we deeply deplore the death of Dr. Woodworth, but recognizing the hand of Him "who doeth all things well," we bow in humble submission to the divine will; and, be it

Resolved, That the association extends its heartfelt sympathy to the bereaved family in this hour of their deep and bitter affliction, and consolingly points them to Him who "tempers the wind to the shorn lamb" and careth for the sparrows; and, be it

Resolved, That a copy of these resolutions, signed by the president and secretary of this association be sent to the family of the deceased, and that they be printed in the journal of proceedings.

JOHN R. MCLEAN,
THOS. MCD. RICHARDS.

The president announced that he had just received a telegram from Gov. Cullom, which he read as follows:

SPRINGFIELD, ILL., DEC. 10, 1879.

Dr. Joseph Tefft:

I have not been able to leave home to attend your convention. Hope you will have a pleasant and profitable session. I regret that I cannot be with you to-day.

S. M. CULLOM.

QUESTION NO. 7 was brought up again, but as nothing was said on the subject, it was passed, and

QUESTION NO. 8—"The defects in the management of the dairy business in this state; what are they, and how can they be remedied?"—taken up. The following paper by Israel Boies, on this subject, was then read by the secretary:

I. BOIES' PAPER.

Gentlemen: I feel that I have not brains enough to do justice to this subject, and were it not that you have selected three other men to address you on this question—able men,—I would think the subject would fare slim. It would be like offering skim cheese in a full-cream cheese market. But to the subject. First—a want of system, too much slip-shod work, cows neglected, irregularity in feeding, irregularity in milking. I say that half of the cows that are milked in the Northwest (let a good business man make the figures) are milked at a loss; one-half the balance pay no profit; the other quarter pay, why?—because they are in the hands of men that never do business by the halves. If they keep cows, they know every month, yea, every week, whether they pay or not. Such men don't ask their cows to pay without feed, and the best kind at that. Their cows are always milked regularly; they are provided with good, warm stables, protected from all cold storms, always treated kindly; they use no dogs, but soft, kind words. There is too much guess work with farmers, generally. When you ask one man how his cows are doing, he will answer promptly: "Average twenty-five pounds per day; I get $1.25 per hundred for my milk; I get thirty-one and one-fourth cents per day per cow—cost, twenty cents per day for keep; and at that figure my hay and grain is sold for a good price at home. I have the manure for my farm; my farm is growing better every year and my bank account stronger." This is so with but few. Three-fourths of the dairymen in the West cannot say they do as above. Take, for instance, the report of Professor Wilson, at Elgin, in 1874, of the best dairy in 36,000 cows kept in New York State. That season the best dairy produced $92.50 worth of milk, the poorest, $13.50. Both these men carried to same factory and received same price for their milk. I presume, if we knew the product of the entire 36,000 cows, we would find not more than 9,000 of the 36,000 gave over $40 worth of milk. I judge by what I know; it is not guess work. How much is lost every year by bad management in the manufacture of butter and cheese? Why do dairymen keep and milk cows and carry milk to a factory where the proprietor or manufacturer does not understand his business? Why is it that there is eight cents a pound difference in the price of creamery butter? Why is it that there is from two to four cents per pound difference in the price of full-cream cheese? Is there not five cents per pound difference now in skim cheese? Why do dairymen carry their milk to a factory that never turns out any thing but second-class goods? Is it not the fault of you, dairymen? I think if dairymen first guaranteed to the factoryman good, pure milk, then bound the manufacturer to produce "A No. 1" goods or pay the difference, and then carried this rule into effect and lived up to it strictly, I believe it would make twenty-five per cent. in favor of the dairymen. Gentlemen, it is your own fault if you don't remedy this evil. I dislike long epistles, yet a volume can be written on this subject; but I have only touched two points—the production of milk and the manufacture of the same. I have not said one quarter that might in truth be said on these two points, but enough at this time.

On motion the chair appointed a committee of five, consisting of S. W. Kingsley, J. R. McLean, C. C. Buell, L. Sheldon and W. W. Bingham, to nominate officers for the ensuing year.

On motion, the convention then adjourned to meet at 1:30 p. m.

AFTERNOON SESSION.

WEDNESDAY, DEC. 10.

The convention was called to order by the president at 1:45, and

QUESTION No. 8 was resumed.

B. CADY: Said he would make a few suggestions. In the first place, those who were running the factories should run them in a cleanly manner. In the next place, those who brought milk to the factory should be obliged to bring it in good order. Have plenty of water at the factory and have it good. Factorymen didn't let the patrons know what they were getting for their milk. His idea was, to let the patrons know all about it. The business depended upon the patrons and the makers. There were many who didn't understand any thing about the business, but would after a while. He had been to some trouble to collect figures in the matter, and had found a great difference in many cases between dividends paid by factories in this section, for same month. Wanted to know how this could be accounted for.

IRA THOMPSON was called upon, but said he had not come to be heard, but to learn.

T. McD. RICHARDS: Said good butter and good cheese could not be made from unclean milk.

MR. S. K. BARTHOLOMEW (called upon): Said he thought the ground had been pretty well covered by the previous speakers, but he would repeat, for the more our errors were brought before us the more apt we were to correct them. The main point to consider was the stock from which we got our milk. One trouble was that we kept too many cows that did not pay, that ate up the profits of the good ones. The average cow gives about 3,000 pounds of milk per annum. It should be from 5,000 to 8,000. The worth of the animal was measured by what it produced over and above what it cost to keep it. The way to get good stock was to raise it. A few years since he thought he was losing money by raising calves because he could buy them cheaper than he could raise them, and so concluded to buy; but he soon found he was paying much more for the cheap animals—they proved to be the dearer. He selected his cows from choice stock—both dam and sire. He could raise good cows this way. When he had bought them he never got as good ones as he could raise. You didn't notice the expense of raising them. There was another defect—we were putting on the market goods that did not get sold. There was just one of two remedies that must be adopted for this: One-half of us must go out of the business, or we must produce only half of the year. Let the Eastern people manufacture the dairy goods in summer, and we would make in winter. Those were the most important of our failures. We asked the cow merchant to fill up the gaps in our cow ranks, and lost by it. Another trouble:—But few of us were educated to the business. We started out here thinking we could make and sell produce as cheaply as the Eastern people, but we found that to get high prices we had to make goods that would bring them. We were improving, though; we fed cattle better. A few years ago it was not an extraordinary thing to see hides stretched on farmers' fences; but we have got past that. The average farmer can now, without a shudder, throw to his cattle an extra peck of feed. However, one class of bad men might spoil the good effects of many good ones. He had found out that dividing the milk in his factory, putting the milk of big producers in one place and that of small ones in another, resulted good. He had found in doing this that by the other way half of his patrons were robbing the other half. The small patrons were robbing the big ones. We must bear in mind that it took good milk to make good butter, and it took good butter to find buyers.

W. PATTEN: Had had but little experience in butter-making. Was running a small private dairy. He had married a woman who, in her own estimation, knew how to make butter better than he did. He wanted to run the butter-making, but his wife would not let him. But he had a chance once: His wife was called away to the home of his son, last fall, by one of those unfortunate accidents which frequently occur to newly-married couples, and he tried his hand at it. He made a good batch of butter and sent it to Chicago. He didn't hear any thing about it until he called at the commission house on his way to the convention, and found, as the merchant told him, that the butter kept well—very well. He didn't want his wife to know any thing about it, and told the man to bill it at thirty-five cents per pound in returns and he would make up the difference. If he had thought any of the women present would ever see his wife he would not have told of it.

MRS. GEO. SANDS: Had made butter a good while, but lately her "lord and master" had learned how, and now he knew it all. He attended the State Dairymen's Convention at Elgin for a few hours, and he knew much more than she did. He did well, however. The last month he had made one pound of butter from twenty-two pounds of milk. She had made good butter, but didn't feel competent to give any instructions.

Mr. Sands: Said his wife gave him more credit than he thought she would. She found a great deal of fault with him at home. Said he was not neat.

O. S. Cahoon: Thought the first place to start a reform in this matter was in the stable, with all. He never had carried milk to factory, but thought the greatest mistake made was in not requiring more cleanliness. We should be more careful. Suppose we began at the beginning—dressing the cow right and keeping her in a good place.

J. H. Foote: Would add to Mr. Cahoon's remarks. He hired much help and he allowed no man to speak a loud word in his barn; nothing louder than a whisper. You must keep the cows quiet. It didn't matter so much about the feed.

T. McD. Richards: Said that was all well enough in theory, but he hadn't seen the man yet who wouldn't speak out loud, if he was raised by a kicker.

Cahoon: You should get good, quiet milkers from a quiet class of people. Set the pail right under the cows. Clean off the teats, brush them clean. He had to instruct all of his men in the matter of milking.

D. C. Scofield: Thought it was of great importance to keep cows quiet; it was very important, also, that they be kept clean. About keeping cows quiet: He had a man manage his dairy once who had a very quick temper, but he was always good with the cows—always kind. His next man was always yelling at the cows, and he always had trouble. He soon had a number of kicking cows. The cows fell off in their milk. These two facts keep in mind: Keep the cows quiet and keep them clean. A cow should never be milked until every thing is brushed off the udder, and there should be no talking. He had had men who would sing a nice little song when they were milking. It was necessary to keep the animals quiet when you milk. It always affects the milk to make a noise. Remember when you milk, that this question came up at the convention.

McLean: Would like to ask if any of them ever hired a man who could sing. Said he had had cows that could kick a man into the middle of next week, and he had an Irish girl working for him at that time who would sing those old Irish ditties, and could milk the cows he dare not touch. Had a son who belonged to what they called a quartette, he believed, and who was getting to be quite a singer. He always sung while milking, and could get more milk from the cows than his father could, every time. His advice was to hire singers for milkers.

Geo. Sands: Had a fine cow once that would come up regularly every milking time to be milked; was as gentle as a lamb. He built a cow barn and got this cow in the first time to milk her, and found, to his sorrow, that she had what was termed back-action. He told his boys that they might experiment with her and see if they could break her of kicking, by force; but they made a failure of it. This was one of the best cows he ever had. He was in for kind usage.

Patten: Believed in what they called animal magnetism, and its results upon animals. He believed that some men would make a kicker out of any cow they would attempt to milk. He had two sons; one was a good milker, the other, he believed, honestly wanted to make one, but could not.

Bartholomew: Thought there was something in this singing while milking. The best milker he ever had he had kept for twelve years. He never milked a cow that he knew of without singing, and never sung but the one song, and that was "The Sword of Bunker Hill." He didn't believe there was another song that could bring the milk that one could.

Dr. Tefft: Thought the factorymen were in error in their way of running the factories. They should visit each one of their patrons and see how, and in what condition, they got their milk. The Illinois Condensing Co., of Elgin, had a rule, that their patrons' barns should be visited once each week or oftener, and examined. A little sour milk in the milk pail might spoil the whole batch that came to the factory. The manufacturer had not the interest he ought to have in this matter. It was not out of his pocket so much as it was out of ours. It should not be allowed for one man to spoil all. The Illinois Condensing Co. never let milk come into the factory until it was examined by an expert. It was impossible to make good cheese if you didn't examine your patrons' cow stables and appurtenances. If you wish to manufacture a good article you should examine your patrons' barns and find out how your milk came to you. Then again, were our factories clean and nice? Were they run on a clean principle? If all this was done we would not have so much fault found with our cheese in the future as we had now. He knew of Mr.

Borden, president of the Illinois Condesing Co., going to the stable of one of his patrons and examining the milk-strainer. As soon as he smelled it he threw it as far as he could. Of course the patron was provoked, but Mr. Borden told him that he would get him a new one. After that the man brought good, clean milk, for he knew Borden to be a man of his word, and he had told him that if he brought impure milk again he would get rid of him. If all our milk was so handled we could make good cheese. He would never allow a man to take a particle of cream off the milk. If he bought the milk, he bought the whole. If he found a man watering his milk he would cut him off mighty quick.

The committee appointed to select judges to examine the butter and award premiums reported the following:

Judges to Examine Butter:—N. C. Skelton, Boston; E. C. Ellis, Boston, and Geo. Hawthorne, Elgin, Ills. Committee to draw the butter and take it to the judges: D. C. Wolverton, Belvidere, and O. W. Butts, Chicago.

They were instructed to retire to a close room, away from where the butter was stored, and allow the butter to be brought to them by the drawers.

The nominating committee then gave the following report which on motion was accepted and the nominees declared elected.

REPORT OF COM. ON NOMINATIONS:

For president, Dr. Joseph Tefft, Elgin, Ill.; secretary, W. J. Anderson, Elgin, Ill.; treasurer, R. M. Patrick, Marengo, Ill.; vice-presidents, C. C. Buell, Rock Falls; Hon. W. Patten, Sandwich; S. W. Kingsley, Barrington; E. H.

Seward, Marengo; J. R. McLean, Elgin; I. Boies, Davis Junction; Luther Bartlett, Bartlett; Prof. F. Hall, Sugar Grove; I. H. Wanzer, Oneida; Chas. Boone, Winnebago; John Smallwood, Freeport; L. B. Parsons, Flora; Capt. W. H. Stewart, Woodstock; H. W. Mead, Hebron; N. Eldred, Gilman, Illinois.

S. W. KINGSLEY, Chairman Com.

QUESTION NO. 9—"The effects of drainage on different soils, and the best system employed"—was taken up. Upon this topic, R. M. Patrick read the following paper:

R. M. PATRICK'S PAPER.

Mr. President, and Gentlemen of the Illinois State Dairymen's Association: In giving my views upon the subject of drainage, I will state they are the result of some twelve years of practical experience upon a farm of 480 acres—which has rapidly increased in productiveness, and, more recently, owing much to more perfect drainage.

The lands which most need draining in this country are low lands, made rich by alluvial deposits left upon them by the overflow of streams, or the wash from higher lands surrounding them, and the decayed rank growth of coarse vegetation. These lands, being of an alluvial character mixed with rich vegetable growth, form the richest land known, and when thoroughly drained are capable of producing the most luxuriant crops, and in this climate in a succession of years prove more productive and more valuable than much of the higher and dryer land. The natural growth of grass upon these low, undrained lands is coarse, sour and almost valueless for dairy purposes. Without drainage it is impossible to cultivate these lands successfully, or to raise the sweet cultivated grasses which are so necessary for producing a fine article of butter or cheese. So these lands—the richest known—when undrained remain of little value.

There is another class of lands, situated higher, which seem dry upon the surface, but the water line is so very little below the surface that the season is far advanced before the water gets well out of the tillable soil, and the crops of grain or cultivated grasses on such lands are uncertain and unsatisfactory. Drainage of such lands immediately changes their character, making a profitable and reliable soil, which dries easily and can be worked early in the season—a necessity which yearly becomes more apparent in raising and ripening the corn crop. There is also in these soils great fertility which heretofore was locked up but which by drainage becomes liberated, through the action of the warm rains and air now penetrating the whole mass.

Soils which heretofore paid little or no profit are by drainage made to pay large profits, and to pay the entire expense of drainage in one to three crops of grain or cultivated grasses.

Drainage, to be effective, must be deep. Lands adjoining ditches are always saturated with water just as high or near the surface as the water-line in the ditch. On lands quite level the water often stands in ordinary shallow ditches within a few inches of the surface, while in a two and a half or three foot ditch it would stand much below the surface, leaving the adjoining land for one and a half to two feet below the surface free from water, in a condition to be worked early, and almost certain of producing a fair crop of grain or grass.

My former practice in draining was to employ men with spades or ditching machines; either plan always leaving an unsightly bank of earth on one side of the ditch to prevent the surface water from flowing in on that side, and making an excellent place to raise foul seeds to be distributed over the adjoining fields. Recently I find I can dig wider, deeper and better ditches with a team and road scraper, and cheaper than by any other method. My plan is to plow the ground one furrow deep, the width of the scraper, the entire length of the field to be ditched; then scrape this plowing out the entire length, commencing at one end, carrying the dirt back several rods and spreading it evenly on the land. The team continually travels in a circle, carrying out a scraper full each time round. Then again plow and scrape as before, and so on until the ditch is from two and one-half to three feet deep, about three feet wide at the bottom and five feet wide at the top, with sloping sides, and the ground leveled on both sides, so that it can be cultivated to the edge and that the surface water is not prevented from running in. A man and team will make from eight to ten rods of such ditch a day; making the cost within twenty-five cents per rod. On lands where little but surface water is to be carried off a shallow ditch of this character will do, and it can be seeded to grass.

If the lands adjoining the deep ditch are springy and need further draining I then use tile drains, laying them never less than two and one-half to three feet deep, and at nearly right angles with the main drain, from five to ten rods apart, as the lands are more or less wet and springy.

The first field of ten acres drained with tile by me was favorably located for draining, and was done at an expense of $5 per acre. The tile was laid in the spring and the field plowed and sown to oats and seeded to timothy and clover. The crop of oats was one of the largest ever raised by me, and was so badly lodged that fully one-half of the field was cut with a mower; yet the additional value of this crop over any heretofore raised on this field more than paid the entire cost of draining it. The next crop of hay yielded over two tons per acre; and the portion of the field which was heretofore wettest, and almost worthless, yielded fully one and one-half tons of fine timothy and clover hay per acre.

The second field, drained with open drain and tile, not so favorably located for draining as the first, cost $10 per acre to drain, but was more perfectly drained than the first. The drains were laid in the fall and the field plowed ready for spring. The crop first raised on this after draining was oats, and yielded over forty bushels to the acre, of good quality. Two such crops would fully pay the cost of draining over the value of any crops heretofore raised on this land.

Tile drains laid with two-inch and three-inch tile cost me as follows:

16x2-inch tile, at $12.50 per m. here, cost per rod	.20c
Digging tile drain 2½ to 3 feet deep, " "	.10c
Cost of 2-inch tiles and digging drain, per rod	.30c
16x3-inch tile, at $22.50 per m. here, cost per rod	.36c
Digging tile drain 2½ to 3 feet deep, " "	.10c
Cost of 3-inch tiles and digging drain, per rod	.46c

The laying of the tile; after the drain was ready, and the filling of the drain, was done very rapidly by my own men, the filling being done with team and plow, and the expense of laying tile and filling drain would be from five to eight cents per rod.

Many are deterred from undertaking the drainage of their lands because of the expense ; but every farmer can drain a few acres of land each year at a trifling addition to his yearly expenses, and the small capital invested immediately becomes productive—lands which before were nearly valueless paying for draining with one or two crops, and paying large yearly profits thereafter.

The time has arrived in this part of the West when farmers must produce more from their lands to make farming profitable. Cheap lands are becoming scarce, and the tillable portions of old farms have by long cultivation become, in too many cases, so exhausted as to produce unprofitable crops, and the necessity is now fairly upon us for draining and opening up for successful cultivation these rich undrained lands.

PATTEN (called upon) : He could give no rule in this matter, nor lay down any law to follow. He didn't want to take up the time of the convention. We had many farmers who were using drainage, some one kind and some another. He would recommend the tiles. If a man was rich he could afford to let his land go without drainage ; but if he was poor he couldn't afford to let a foot go undrained. He would lay down no rule, either in regard to size of tile or the depth needed. You must be governed entirely by the land. He had made mistakes in draining, but he had found it profitable. Had used too small a tile. Had used from two to six inch tile at the depth of from two and one-half to nine feet. Your grade should be even, and at the mouth of the tile well protected. You would find that the cattle got at the mouth of the drain and destroyed it. Take a two-inch plank and level it off ; the cattle will let it alone if level. It didn't answer to let the line sag, for, if you let it get out at the start, a fine sand would run through and clog them up. Make the grade two inches to each 100 feet ; you may need more of a grade if you run near a hedge. The fine fibrous roots of the hedge would fill up the tile. If you run under a hedge you would have to take up the tile every few months.

SCOFIELD: Would tile laid three feet below the surface be protected from frost?

PATTEN: Yes, he thought so, but no water should be allowed to stand in the tile. The better way was to lay it lower than three feet. He had found by experience that drained land was profitable—he knew it was. He had tried some very poor looking lands. He had had a pond of about two acres in area from which he had raised, after draining, seventy-five bushels of corn to the acre. His soil was the loose, porous soil, but thought that as good results could be had in all soils. One error was, we had too small tiles. His tile was round and large. Some of his neighbors had used tile sixteen inches. He had tried to get tile laid solid, and that was a great point. One advantage of round tile was, you could lay it evenly and well. Never to get an experienced drainer to do your work. He had been fooled that way once. He had got a man to lay the tile for so much per rod, and found that he was more particular about the rods than the tile. They should be left level; that was the great point. He could give no rule about size of tile, because there was a great difference in soil. He had run some ditches in peat bog and did not succeed; below the peat was a quicksand. He believed in some places you could run ditches shallow. In his part of the country they set their tiling deep. After the rain in the spring you would see that the first dry land was over your ditches. In covering joints of tile he would get clay soil. He had laid tile when they filled as he went along, but the first heavy rain after they were laid cleaned them out. In making his ditch he used what was called a "goose-neck." In laying he didn't allow his men in the ditch after leveling; it must be level bottom. In laying the tile he used a stick and dropped them into the ditch. In very wet spots he used his judgment as to how many feet apart to lay tiles. He had raised seventy-five bushels of corn per acre where it had been slough land. Most of the farms in Illinois were three-fourths good land. Sometimes you could put corn for first crop on drained land; on most land it would not do at first, however.

JUDGE LAWRENCE: Thought the question of drainage was one of the most important. He had drained land that was more rolling than that in this part of the state, where, owing to the peculiar distribution of the soil strata, the water ran out on the surface of the ground. The trouble in drainage was that the water that came into the tiles was was from the bottom of the ditch. Round tiles were the best. He knew something about the grounds of the Illinois Industrial school at Champaign. There had been many ponds on those grounds; now there were none. Tiling there did not cost more than one-eighth of what it did here. He had found it unsatisfactory to use small tiles. About the number he would say, you must have enough to drain well. His son had raised eighty bushels of corn per acre from ground that was once a pond. He thought all rolling ground could be benefited by the use of the drain tile. We thought we could not get tile because they were too dear, but when we got to wanting them very much then we would make them. In laying, the first thing to be done was to set your stakes; an inch to the rod was enough of a grade—but to be careful or it would fill up. Have it level. Make the fall a little more if any thing going down a grade; to walk backwards as you laid the tile, and not to get into the ditch after the tiles were laid. You wanted clay for the bottom of the ditch to cover them. But you might get it all layed out for you, though you could never do any thing until you learned by experience. An open ditch would not drain the land as well as tile. It filled up, and then you couldn't get the water from the bottom ; still, you should use an open ditch in draining peat beds.

PATRICK : Thought if all farmers had plenty of money to use, they should have large tile, but as they hadn't, they must take the matter gradually. He had found no trouble in keeping open his open ditches.

LAWRENCE : Had seen open ditches used and knew they cost double what tiles did, to keep them open.

REV. WREN : Thought there was much difference in open drains. He would like to hear Mr. Patrick explain what kind of an open ditch he used.

PATRICK : His ditch was two and one-half or three feet deep, and cost him twenty-two and one-half cents per rod to dig. He had had no trouble with its being filled up so far, but if it did fill it could easily be opened again. He thought it was surely the cheapest ditch.

On motion, the convention then adjourned to 7:30 p. m.

EVENING SESSION.

WEDNESDAY, DEC. 10.

The assembly was called to order at 7:30 by the president.

On motion, the chair appointed a committee, consisting of J. M. Frink, L. Bartlett and J. H. Foote, to examine the dairy implements exhibited.

The judges selected to examine the butter on exhibition then reported the following

AWARDS.

ELGIN BOARD OF TRADE SWEEPSTAKES.

	Points.
Premium of $50 in gold to L. C. Ward, St. Charles,	47⅔

THURBER OR HIGGINS SALT PREMIUMS.

Munn & McAdam, Belvidere, 1st, (gold medal), -	47⅔
C. C. Buell, Rock Falls, 2nd, (silver medal), -	47⅓
W. A. Boies, Marengo (Home factory), 3d, (bronze medal), - - - - - - -	47

MOULTON OR ASHTON SALT PREMIUMS.

W. A. Boies, Marengo (Union factory),	1st, ($25.00).	46⅔
Munn & McAdam, Belvidere, -	2d, ($15.00),	45⅔
Geo. Sands, Belvidere, - - -	3d, ($10.00),	45⅓

The awards were made on the basis of fifty points for perfect butter, divided as follows: Flavor, 10; make, 10; texture, 10; keeping, 10; color, 5; salt, 5—total, 50. Further on will be found a tabular statement of the points registered on all the butter exhibited. Instead of the name of the exhibitor will be his number, opposite the scale of points registered. As all knew what their numbers were, each exhibitor will be able to see at once wherein his butter failed.

The president called upon Mr. Wheeler, a representative of the Chicago Linseed Oil Co., who occupied a short time in explaining the usefulness of the linseed meal as a feed for dairies.

Mrs. F. G. Hackley, of Marengo, then read the following paper on "The homes of dairymen and what they should be:"

MRS. HACKLEY'S PAPER.

Mr. President, Ladies and Gentlemen: I quite agree with you. What presumption! What am I that I should have superior knowledge of dairymen's homes, and the conceit to even attempt to shadow forth their future? I confess to being intimately acquainted with one dairyman, possessing to a high degree interest in his home and surroundings, and out of supreme respect for him, and for most reasonable objections on his part, I know comparatively little of other men of like pursuit. I have viewed their homes, in holiday attire, occasionally in undress uniform and actual service. From my own experience and a glimpse of those traveling in the "milky way," it is a safe conclusion to arrive at, the homes in question must necessarily be exceedingly busy ones. Else should they differ materially from the homes of "the butcher, the baker or the candlestick-maker"? Are the dairymen considered a peculiar people in the land? Undoubtedly they are recognized by their dress of overalls and coarse boots with a broadway cut, which they wear with such an air as "smells to heaven." But what will not one endure with butter in the neighborhood of forty cents per pound?

Let the consumer felicitate himself upon his past good fortune, obtaining something for comparatively nothing, dairy goods being below the actual cost of production. "General average" has a word to say, and the late ruling prices bring sunshine and plenty into the dairyman's home.

Once more is heard the merry jingle of the "almighty dollar" in his pocket, with the comforting assurance that the dairy industry is second to none. Little did our Puritan ancestors look forward to the day and generation when the mother country would stretch forth her hands in want to her exiled children, who are to-day proud to send her food and raiment. How providential in her straightened circumstances, that they can supply her every need from their abundance. Our depression for the last three years forced us to great exertions. We must make wonderful improvement to be able to sell our wares.

Over-production of inferior articles made them a drug upon our hands. With this mortifying result before us, and, to be second to none in the merit of our goods, are the reasons that to-day we find a ready and remunerative market. In the flush of our success we must not rest upon our laurels, but press forward to higher aims in this direction, and gain greater achievements. And this industry is complete and separate from the ordinary house-keeping, which, when combined, serve to make one's life a constant round of duties. It is a nice point, and no ordinary study and exertion is required to mingle with the world socially or religiously. True, where the milk is carried to a factory, there is less work for the house than where there is a home dairy. Yet the utensils (which are many) must be purified with exquisite care. Eyes, nose and hands of the housekeeper are brought into requisition. Eyes to see that every point is reached, nose to assure herself all is perfectly sweet, and hands to accomplish the whole. Possibly the tongue, with suggestions in reference to cleanliness, manner of milking and care of apartments occupied by "Brindle" and "Snowflake."

Milking is an accomplishment I would earnestly advise the dairyman's wife not to cultivate. She would not be, like Mrs. Toodle's eccentricities, "so handy to have in the house," but so handy to have in the stables on occasions. But friendly relations with the calves is to prolong their existence, and a financial success. Patient, exceeding patient, tender care. The little creatures are too often considered obstinate because they do not readily do that which nature has never required of them—drink some sour mixture that mortal is pleased to expect them to thrive upon. The circumlocution and gymnastic exercise necessary, and adjectives unnecessarily employed in teaching the infant bovine to drink, when undertaken by a man, would beggar description and fill books. Would we could read the other side of the story, bound in calf.

You may justly say, what has this to do with the "homes of the dairymen?" Much, we assure you. Cotton was king until corn waved its tasseled scepter. Now, the cow and her progeny are absolute sovereigns, usurping unlimited power. Every effort must bend towards their well-being and comfort, else they will refuse to yield munificent returns, which gives prosperity and comfort to the household. What busy homes they are, too, "from early morn' till dewy eve"! The dairyman's home. The name is suggestive of a comfortable degree of wealth. If that wealth is acquired by the present owner, it means that the day of good, strong, brave tusseling with poverty is over; that the foe he had wrestled with so long and stoutly, is vanquished. Yet to keep the vantage ground so valiantly gained, requires busy hands, notwithstanding he can give his family many comforts and luxuries heretofore unattainable. "No man has a better right to kill himself by overwork than he has to do it by over-drinking. If suicide be a crime, he who dies by putting too great a task upon his strength, is as truly a criminal as he who dies by putting a bullet through his brain. If a certain amount of rest and recreation is necessary to a man's health and life, the omission to take it is as great an offense against God's law in nature as would be the omission to take food, and death by willful starvation is no more an act of self-destruction than is death by willful fatigue." One can not but be struck with the force and truthfulness of these remarks. Where is the remedy? Unquestionably the housekeeper in the dairyman's home is too often over-taxed—"The tireless service of willing hands, the strength of swift feet * * *." It is useless to enumerate the duties that pile themselves Alps high upon the weary shoulders, and more than useless to suggest a servant to lighten the labor. We remark here, emphatically, there are no servants in this progressive, enlightened, civilized nineteenth century, that know how to work. Then is it any wonder that the brow becomes ruffled and the voice takes on a hard, monotonous sound, directly in the face of duty, when the body is over-weary? We know full well, to be happy ourselves and to make others happy, our countenances should be placid and our cheerfulness assured by our vocal organs.

> "Fie, fie! unknit that threatening unkind brow,
> And dart not scornful glances from those eyes,
> To wound thy lord, thy king, thy governor:
> It blots thy beauty as frosts bite the meads,
> Confounds thy fame as whirlwinds shake fair buds,
> And in no sense is meet or amiable.
> A woman moved is like a fountain troubled—
> Muddy, ill-seeming, thick, bereft of beauty;
> And while it is so, none so dry or thirsty
> Will deign to sip or touch one drop of it.
> Thy husband is thy lord, thy life, thy keeper,
> Thy head, thy sovereign, one that cares for thee
> And for thy maintenance: Commits his body
> To painful labor, both by sea and land,
> To watch the night in storms, the day in cold,
> While thou liest warm at home, secure and safe,—
> And craves no other tribute at thy hands
> But love, fair looks, and true obedience."

That reads and sounds very well, Mr. Shakespeare; but the women of our time are doing their full share of keeping the home "warm, secure and safe." The world and women have made great progress in three centuries. Could we have stepped into the modest, unpretending home of the "Bard of Avon," where happiness seemed to dwell, and looked our surprise and pleasure, how surely he would have uttered these talismanic words: "Anne Hath-a-way!" An unknown author, in a poetic way, has sought to give us sympathy in some verses styled "Kitchen Consolation." Allow me to extend this sympathy:

> "Oh! this baking and brewing,
> This boiling and stewing,
> And washing of dishes three times a day;
> The griddle-cakes turning,
> The skimming for churning,
> The setting of tables and clearing away?
>
> "What is it but weariness,
> Work without cheerfulness—
> The same round of labor day after day?
> I'd rather be painting,
> Or sewing or braiding,
> Or spending my time in a pleasanter way."

Thus my fancy kept dreaming,
O'er the hot dishes steaming,
And wondering why I must a kitchen fire tend,
Till an angel's low whispering
Compelled me to listening,
And taught me these household discomforts to mend.
"Is your work not the oldest,
The usefulest, the noblest—
In ministering daily to the life God has given?
If the work is unceasing
Of washing and sweeping—
Remember that order's the first law of heaven!
"Pray what gives more pleasure
Than a well-seasoned dinner
When tastefully served on the family board?
Thank God you can labor,
Can knead, mix an' flavor,
And draw pleasant meals from a farmer's rich hoard—
"That heartsome delight
At morn, noon and night,
When the family gathers for chat and good cheer!
Then should you be complaining
Of work unavailing,
That brings joy to the loved ones each day of the year?"

Strategic movements occasionally have a most happy effect in the home field. Let the lord of the manor but imagine he has his own way, how sweetly he will consider himself the originator of your feats of generalship, and the household ship in its swan-like progress is a pleasing sight to behold. In all homes one or the other rule, and may no discord ever mar the beautiful harmony of that life. Without domestic happiness nothing on earth is to be desired; and with it, no withholding of earthly goods is to be dreaded. But the domestic machinery does not always run smoothly: sometimes it is on the center and doesn't run at all. There are examples of placid, lovely people often before our mental vision, "Oh! world look on and wonder," yet if we were to live the round of the seasons in their home-life, we would say the "half has not been told." Actually so like their neighbors, with a good bit of the common humanity flesh is heir to, with which to spice their everyday life, we heartily condemn their faults and ways, because they are out of our possession. How ours must appear to them.

"Home is where the heart is," I once heard an old gentleman remark, and I thought how true, for if the heart isn't there, what a frail structure. To make it an attractive place, a happy refuge from the world, a pleasant abiding place, adorned and cozy, the heart must be interested. Whatever our vocation, we must be thoroughly alive and interested to be successful; and, our lives are what we make them. Yes, in a measure, and as truly, our lives often make us. We hit upon many sharp corners as we battle along, and wonder why,—almost forgetting "there is a divinity that shapes our ends, rough hew them as we will." If we could only remember, in the toil and anxieties of our every-day life, we are weaving like the workers on tapestry, among the tangled ends and innumerable colors on the wrong side of the pattern. In our after life it will be presented to us in all its perfection and beauty, the threads even and beautiful, the colors fair to see.

It was a blessed mother that gave to a child these lines, to quell a turbulent, restless spirit:

"Be quiet, take things as they come,
  Each hour will draw out some surprise;
With blessings let thy days go home,
  Though shalt have thanks from evening skies."

And may these words of wisdom descend and cover us like a beautiful benediction through our lives, and—

"Let us gather up the sunbeams,
  Lying all around our path,
Let us keep the wheat and roses,
  Casting out the thorns and chaff.
Let us find our sweetest comfort
  In the blessings of to-day,
With a patient hand removing
  All the briers from our way."

After a short recess, in which the finance committee were allowed to press their claims, Dr. Tefft talked for a short time upon the subject of "Milk and its Uses," as follows:

DR. TEFFT: "Ladies and gentlemen—while waiting a few moments for an essay you will please alow me to invite your attention to some of the uses of milk, which are as follows:

"1st—In its normal state it is one of the best of foods for young mammals. It is also good food for those further advanced in life.

"2d—Milk may be condensed, with or without sugar, for use in the human family: if with sugar (called preserved milk), it will keep good for years.

"3d—The caseine of milk may be made into cheese, for food.

"4th—The caseine may be made into lactine, largely used for stamping or printing calico.

"5th—The serum, or whey, of milk may be mixed with cereal caseine and made into a nutritious food for man in the form of cheese.

"6th—Full-cream cheese—a thing that is but rarely found—yet good food for the human family.

"7th—Milk is frequently made into koumiss, much used as a mild, nutritive stimulant in sickness. It contains about one per cent. of alcohol.

"8th—The whey of milk may be evaporated and lactine, or sugar of milk, obtained, which we trust will be largely used some future day for culinary purposes.

"9th—Sour milk is largely used in the United States to make jewelry called American coral, celluloid, and jet.

"10th—The cream, or fatty part, of milk is usually made into butter. Butter contains—

	Summer.	Winter.
Margarine	40	65
Butter oil	60	35
	100	100

"May butter frequently contains—margarine, 68 per cent.; butter oil, 30 per cent., and butzric, caproic and capric acids, 2 per cent.

"A compound is supposed to exist in margarine consisting of three atoms of carbon united to 2 of hydrogen, which is named lipzle. This unites with an atom of oxygen, forming oxide of lipzle—$C_3H_2O_1$. Now margarine consists of—

1 of margaric acid	$C_{34}H_{34}O_4$
1 of oxide lipzle	3 2 1
Gives	1 margarine—$C_{37}H_{36}O_5$

"Butter oil consists of—

1 of oleic acid of butter	$C_{34}H_{31}O_5$
1 of oxide of lipzle	3 2 1
Gives	1 of butter oil—$C_{37}H_{33}O_6$

"Now, when the oxide of lipzle is separated from the fatty acids, it unites with water and forms glycerine, or oil sugar—

2 of oxide of lipzle	$C_6H_4O_2$
3 of water	3 3
Gives	1 of glycerine—$C_6H_7O_5$

"If we add this glycerine to a mixture of sulphuric and fumigating nitric acids, pouring it into water and washing upon a filter, we have glonoin, or nitro-glycerine, a substance which holds in reserve power sufficient to level mountain ranges."

The following paper by Stephen Patrick, of Truxton, N. Y., on "The Origin of Soils, their Formation and Distribution: Explaining the soils and climates best adapted to dairying and the method of increasing their adaptation," was read by R. M. Patrick, of Marengo:

STEPHEN PATRICK'S PAPER.

Gentlemen of the Illinois State Dairymen's Association: In compliance with a request of a member of your association I write a brief essay upon "The origin of soils, their formation and distributions; explaining the soils and climates best adapted to dairying and the method of increasing their adaptation."

1st. The origin of soils; their formation. In giving my views of the origin of soils and their formation I will give briefly a synopsis of the combined theories of modern geologists, who substantially agree that all soils have their origin in the destruction of ancient rocks; which, in the early geological period, covered the earth's surface. The granite formed the first stratum or platform, on which all other formations are rested. At the commencement of the first geological period all rocks lay in a horizontal position. During the early and middle geological periods, the whole of the earth's surface was subject to great and intense disturbance, caused by the action of intense subterranean heat and volcanic action; continents and islands were by the process of upheaval, elevated above the surface of the ocean. During the violent throes and convulsions which occurred at these periods in the elevation of continents and islands above the surface of the ocean, in many parts of the earth, their stratas of rocks were twisted, bent, tilted, or thrown out of place, and often lay with a heavy dip; or in a vertical position, in mountain ranges, hills and elevated plains. During these geological periods intense heat prevailed on the earth's surface, causing dense vapors and a great amount of rainfall on mountains, hills and plains, then elevated above the ocean's surface; forming rivers and streams, with rapid currents, plunging down mountain and hill-sides with great force, scooping out canyons, gorges, ravines and deep valleys on mountains and hill-sides, disintegrating rocks from their beds, grinding, decomposing and pulverizing them to atoms while drifting their debris to oceans, seas, bays and lakes, which were continually receding by the process of elevation of land above their surface, forming large tracts of diluvial soils, on both continents. During the long succession of ages in which these diluvial or drift-soils were forming, the great heat and immense rainfall which prevailed during the receding of waters of oceans and seas and the formation of diluvial soils, caused an immense and luxuriant growth of vegetation on the earth's surface. The decayed matter of this vegetation intermixing with the materials of these diluvial soils or drift-formations, in most parts of both continents, formed soils of great fertility. The greater portion of the great basin drained by the Mississippi, Missouri and Ohio rivers and their branches, and the lake system of North America, are soils of this character; formed mainly by the decomposition and pulverization of rocks underlying these diluvial deposits, drifted from a distance. These formations are wonderfully rich in calcareous, saline and alkaline matter, and mineral infiltrations; which belong respectively to the geological periods of their formations, and are soils of great fertility and productiveness where there is sufficient rainfall during the summer and fall months.

2nd. The formation of alluvial soils. These soils are formed and deposited in river valleys by the annual overflow of rivers, by the removal of diluvial soils already formed, and the decomposition of rocks on the mountains and hillsides of the river sources drifting their debris or sediment, intermixed with vegetable matter, and depositing them in their valleys and in deltas at the mouths of rivers where they discharge their waters into oceans, bays, seas and lakes. These soils partake in character of all the geological formations from which these soils were formed, and are generally rich in organic matter and mineral infiltrations, and are the most fertile and self-sustaining of all soils known; as in the valley of the Nile, Ganges, Rhine and valleys of rivers in North America. All taken together cover large tracts of country.

3rd. Soils of volcanic origin. The soils derived from volcanic action are of much less extent than either of the former ones. They have their origin wholly by the melting of the primitive rocks by intense subterranean heat and volcanic action. These melted rocks form lava, ashes and pumice, which are raised and forced through the craters of volcanoes during their eruptions, running down their mountain sides into the valleys and plains below them, and forming soils partaking of the character of all the rocks forming these soils. Volcanoes were more numerous and eruptions more frequent in early periods than at present. The soils derived by volcanic action are generally, where there is sufficient rainfall, moderately fertile, as attested by the magnificent forests grown on these soils in Oregon, Washington Territory and British Columbia.

The intrinsic value of volcanic action during past ages, in contributing means for the advancement of modern civilization cannot be fully estimated. By its action mountain ranges have been elevated. Their rocks have been tilted, bent, twisted and displaced, and their precious metals and mineral treasures have been revealed and made accessible to the ingenuity of men and used for the purpose of commerce and mechanical arts. All this in addition to the formation of valuable soils for agricultural purposes.

Having given a brief outline of the origin and formation of soils, I will, as I understand, give the order of their distribution, explaining the soils and climates best adapted to dairying. A sufficient and equal rainfall through the spring, summer and fall months, and an equable climate not subject to the extremes of heat or cold, are as essential to successful dairying as a fertile soil. The soils formed from the primitive rocks, even before the existence of organic life, being mostly volcanic and mineral-bearing as surface rocks, are, with sufficient rainfall with a mild and equable climate, well adapted for dairying; as in Oregon, Washington, British Columbia and Montana. These countries and Great Britain, Belgium, Holland and Denmark, owing to their mild and equable climate, are in my opinion the best adapted of any countries known for dairying. All of these countries are situated between 45° and 50° of north latitude. The equatorial currents of the Pacific ocean, flowing with their warming influences northeasterly to the shores of California, Oregon, Washington Teritory and British Columbia, passing through the valley of the Sacramento and the valley of the Columbia river, and through the great gap in the Coast Range of mountains, 150 miles in width at Vancouver's, their currents of warm atmosphere, passing northeasterly through Oregon, Washington and British Columbia, till they meet the polar currents; then their course veering southeasterly through Montana, give these countries a mild and equable climate and sufficient rainfall, similar to the climate of England, Belgium and Holland—caused by the equatorial currents passing through the gulf stream across the Atlantic northeasterly to the shores of Western Europe.

The soils next in their order of formation are derived from the decomposition of carboniferous rocks, which were first elevated during the early part of the middle portion of geological periods. Elevation and subsidence continued through all ages of this formation with that portion of the earth covered by these rocks. Stratum upon stratum of coal was formed, with layers of rocks between each stratum of coal. Often the central portions of these coal basins were covered with drift, to the depth of 2,000 or 3,000 feet; while the outside rim of these coal basins came to the surface. The distribution of soils derived from these rocks, west of the Alleghanies and north of 37° of latitude and east of the Rocky mountains, is very extensive, and now ascertained to cover not less than 200,000 square miles—being distributed among all the states and teritories drained by the Mississippi and its branches, covering half the state of Illinois and some 20,000 square miles in Montana—taken as a whole, the most fertile of any class of soils on this continent. Most of these soils are well adapted for dairy production. The soils next in the order of their formation are magnesia limestone of Illinois, Wisconsin, Iowa, Missouri, Kansas, Nebraska, Minnesota, Dakota and Montana. They are cotemporaneous with the Trenton, Black, and Hudson river limestones of New York. The rocks which underlie these are in the Mississippi valley the same as in New York. The soils derived from the decomposition of these rocks are of great fertility and productiveness, and with sufficient rainfall during the summer and fall months and an equable climate, cannot be equalled on the continent for their adaptability to dairying. The next formation in its order is the Devonian. The Chemung sandstones of New York, New England, and Northern Pennsylvania are of the series of this formation. They occupy the greater portion of the water-shed from Nova Scotia to Ohio, when their waters discharge into the great lakes and St. Lawrence, on the north, and into the Atlantic on the south; being on an average about 1,600 feet above tide-water; the same elevation as the water-shed where rivers at the head-waters of the Mississippi flow south, and the Red and Makenzie rivers flow north. The soils of this formation are mainly derived from decomposition of the sandstones and slate rocks, and are not as fertile as the latter or "the magnesian limestone formation," but their climate, owing to their elevation and the general equal distribution of rainfall through the summer and fall months, makes these soils the most reliable of any known on this continent for dairying. The other rock formations of the Devonian system are the Onondaga and Niagara limestones of New York, Cincinnati limestones of Ohio and Kentucky, Cedar Valley limestones of Iowa and Minnesota. All the states east of the Mississippi have large tracts of land of this formation which, as a general rule, have a soil but little inferior to the magnesian limestone formation of Iowa, Illinois and Wisconsin—and with a larger amount of carbonate of lime and organic matter than any other class of soils and of great fertility—but better adapted for the production of grain than for dairying. The reasons for the general abundant supply of rainfall during the summer and fall months on the great water-shed of the Chemung sandstone formation, may be explained by the fact that lands elevated 15,000 to 18,000 feet above tide-water, attract the moisture of the atmosphere, and produce a greater amount of rainfall and a more equal distribution than those regions situated much lower or much higher than this elevation. The sources of supply of moisture are the Atlantic on the south, and the great lakes on the north and west; their atmospheric currents meet on this water-shed and cause, as a general rule, an abundant rainfall. The same influences operate in part in causing rainfall in Illinois, Wisconsin, Minnesota and Iowa. The moisture of the upper atmospheric currents is supplied by the great lakes, and flows southwesterly, and returns in the lower atmospheric currents attended with rainfall—flowing from the south-west to the north-east, as established by a long series of observations made by the signal department at Washington.

On the subject of the best means to increase the adaptation of soils for dairying, I will mention one of the most practical manners of doing it. On all dairy farms it should be a standing rule with the owner of the farm to make all the manure possible from the produce of the farm, and judiciously apply it where most needed. It is a well-established fact that the liquid manure of an animal is worth quite as much yearly, if properly applied, as the solid manure is. Every stable should be so constructed as to save the liquid as well as the solid manures of all animals. All portions of a dairy farm that are too wet to produce the best qualities of cultivated grasses should be thoroughly drained and cultivated, till fit to raise cultivated grasses in the highest degree of perfection. Low, wet, sour lands produce an inferior quality of grass, but illy adapted to the production of milk for butter and cheese; but when thorougly reclaimed, by perfect drainage, are often the most valuable portions of farms for grazing purposes. As a rule there is no class of investments that pays better than thorough drainage of wet lands. For dairy purposes grass for hay should be cut while green, and never allowed to fully ripen. When grass is cut before it is fully ripe the quality of the hay is much more valuable than when left to ripen, and a second crop speedily starts; and then, also, is the proper time to apply liquid manure by filtering on grass lands.

In this country a 100-acre farm that will keep thirty cows is considered a good one. On the alluvial soils of England, Belgium and Holland, farms under thorough culture by a system of soiling and a judicious application of manure—solid and liquid—often keep two or three cows to the acre, and two or three crops of grass are often cut yearly. Heretofore the butter and cheese made in these countries were far superior to American manufacture, owing chiefly to their favorable climate, their practical knowledge of farming, and the superiority of their cultivated grasses and dairy stock. Recently America has made great strides in the manufacture of dairy products, and now American cheese competes fairly side by side with the best English-made cheese in its own markets. The progress made in the Western States during the last few years in the manufacture of butter has been wonderful. Twenty years ago Illinois was not considered capable of producing even a fair quality of butter. To-day she not only produces more wheat than any other state in the Union—being for the last year 45,000,000 bushels, to Iowa 40,000,000, Nebraska 37,000,000, Minnesota 36,000,000 and Kansas 30,000,000—but she has taken the front rank among the butter-producing states; and the butter now made in the creameries of northern Illinois and in your own immediate neighborhood stands higher in quality and sells for more in the great markets of this country, than the butter made in any other state in this great nation.

A suggestion was made by one member that the president call upon those who had received premiums on their butter to give a description of their modes of making the premium butter. As all present seemed to favor the suggestion, the president called upon Mr. C. C. Buell, who gave the following description of his plan:

C. C. BUELL'S METHOD: The milk was set in ordinary setters in a cool room—not in water. It was skimmed in twenty-four hours, and skimmed the second time twelve hours later. The cream was kept twenty-four to forty-eight hours, or until a marked acidity appeared. It was churned in a revolving churn known as "Stark's Churn and Butter Worker." The churn was started (cream being at a temperature of 64°)—made twenty-five to thirty-five revolutions in a minute, and butter appeared in from one hour to an hour and one-half. As the butter granules began to appear distinctly about three gallons of cold water was added to a churning of say sixty pounds. After a few revolutions the buttermilk was withdrawn clean—the churn being stopped as soon as it was practicable to do this. Then about three or four gallons of strong brine was poured into the churn and the churn carefully revolved so as to keep the butter disintegrated as much as possible and at the same time thoroughly to wash it. Afterwards a brine of, say two gallons of water and sixty ounces of salt, was added and the churn revolved three or four times, and the same repeated three or four times during, say half an hour or more. The butter was then put into a tub used for this purpose, allowed to stand one to three hours, then placed on the butter-worker and very lightly worked and packed for market. If there was an apparent lack of salt at the time of working, more was added, according to taste.

GEO. SANDS' METHOD: Being next called upon, he said his process was very simple, and he had taken no extra pains with the butter which received the premium. Used the iron-clad pan. Set milk in winter forty-eight hours; first heated it to about 90°, then cooled it off as rapidly as possible—the colder, the better. Kept the room where he churned at about 60°, and cream at about 62°. When the butter collected to lumps about the size of hickory-nuts, he stopped churning and rinsed the butter clean, after first drawing off the buttermilk. He then salted the butter—about three-fourths of an ounce of salt to one pound of butter. He used what was called the Marengo churn. He let the butter stand about twenty-four hours after the first salting, then added a little more salt. Used coloring that he made himself from anatine and curcuma root. His cows were of the Durham breed, and he had made through the month of November one pound of butter from each twenty-two pounds of milk.

On motion it was decided that the manufacturers not present, who had received premiums on their butter, be asked to give the secretary a statement of how they made their butter; the same to appear in the proceedings of the association. In accordance with this resolution the following statements were received from L. C. Ward, Munn & McAdam and W. A. Boies:

L. C. WARD'S METHOD: The milk was received once a day at his St. Charles creamery, and set in deep pails in cold pools of water. The skimming was done while the milk was sweet; the cream was left to acquire a slight acidity before putting in the churn. It was churned in a square-box revolving churn with a capacity of about 350 pounds of butter at a churning. Time taken to churn, one to one and a half hours, usually. Before the butter was taken from the churn it was washed with the necessary quantity of fresh water to wash out the most of the buttermilk; it was then taken out, slightly worked and salted with three-fourths of an ounce of Higgins' "Eureka" salt to the pound, and set away for twenty-four hours,—when it was worked again sufficient for the final packing. The working was done with a butter-worker run by steam power. Had made 150,000 pounds of butter at his creamery each year for the past two years.

MUNN & MCADAM'S METHOD: Were very particular to get their acid right, as they considered it of great importance, and then brought the cream to a temperature of 63°. Run the churns so as to bring the butter in one hour. Care was taken to stop the churning while the butter was in a granulated state. The buttermilk was then drawn and water the same temperature put into the churn and the butter thoroughly washed, the water drawn off, and more water added. The butter was then taken from the churn and but slightly worked, when the salt was added at the rate of one pound of salt to twenty of butter, and thoroughly worked. Then the butter was placed in a warm room and allowed to stand twenty-four hours, when it was worked as little as possible and packed.

W. A. BOIES' METHOD: His was very simple. Set his milk in open setters; let it stand about twenty-four hours. Always allowed it to get a little acid before churning. Before putting in churn raised the temperature to 64°, and churned until the butter appeared in lumps about the size of peas. He washed the butter twice—until water came from it clear. Kept it cool enough to be firm while working. The butter upon which he received Higgins' salt premium was all from the same churning.

During the evening Rev. Hutchinson, of Marengo, was called upon to speak. He responded in a few well-timed remarks, in which he expressed himself pleased with the evident advancement of the dairy interests in this country. He was glad, he said to see so many of the younger class attending the meetings of the association. It rested with them to advance the business they were engaged in. He was pleased to see them take so much interest in the discussions on the various questions. The point of taking good care of cattle, he was glad to hear discussed. He thought the more care we gave cattle the more we would get out of them. Kindness to them would bring its reward. He was pleased to see the ladies out. This subject of home was a good one to discuss. We must not forget as we were traveling through this world that we had a social nature as well as a physical nature that needed cultivation.

The secretary then read the following paper on "The Food Value of the Milk Product of the United States," prepared by G. P. Lord, of Elgin:

G. P. LORD'S PAPER.

"Three and one-half pounds of milk possess the same amount of nutrition that is contained in one pound of boneless beef."—*Willard's Dairy Husbandry, p. 13.*

"Every fat ox gives 57.7 per cent. of butcher's meat, including bones, to every 100 pounds live weight."—*Encyclopedia Britannica, 8th ed., vol. 9, p. 762.* "About 12½ per cent. of such meat is bone."—*Same work, p. 762.* Consequently 50 per cent. of a fat steer is boneless beef.

"The average annual product of milk in 1860 in thirteen states was 446 gallons per cow."—*Willard's Dairy Husbandry, p. 20.*

Assuming this as the average annual product per cow, the 13,000,000 milch cows in the United States will produce annually 5,798,000,000 gallons of milk, weighing 50,732,500,000 pounds, containing nutrition equal to 14,495,000,000 pounds of boneless beef; which is equal to the boneless meat in 20,650,000 fat steers, of the gross weight of 1,400 pounds each, or 700 pounds each of boneless meat.

If we desire to find the money value of that amount of nutritive food we have only to ascertain the value of such cattle in our commercial markets. Estimating it at $4.50 per hundred pounds, live weight, it amounts to $63 per head.

20,650,000 steers, at $63 per head, equal	$1,300,950,000
Deduct one-fifth for hide and tallow	260,190,000
	$1,040,760,000

This is the food value of the annual milk product of the United States, compared with the same amount of nutrition in beef.

STATEMENT SHOWING THE ANNUAL LOSS OF MILK SUGAR IN MAKING BUTTER AND CHEESE IN THE UNITED STATES.

Milk contains 4 1-5 per cent. of milk sugar.—*Am. Cyclopedia, vol. 11, p. 543, sample 8.*

Milk contains 4½ per cent. of milk sugar.—*Willard's Dairy Husbandry, p. 500.*

Skimmed milk contains 4.66 per cent. of milk sugar. —*Willard's D. H., p. 500.*

Buttermilk contains 4.61 per cent. of milk sugar.—*Willard's D. H., p. 500.*

Whey contains 4.57 per cent. of milk sugar.—*Willard's D. H., p. 319.* (Average of 15 samples).

Butter contains 0.70 per cent. of milk sugar.—*Willard's D. H., p. 500.*

Cheese contains lactic acid but no milk sugar.—*Willards D. H., pp. 340, 341 and 342.*

Estimated quantity of butter produced annually, 1,000,000,000 pounds.—*Dpt. of Agr. Report for 1877, p. 343.* Estimate of cheese, 350,000,000 pounds.

To produce this quantity of butter and cheese (estimating 27 pounds of milk for one pound of butter, and 9¾ pounds of milk for one pound of cheese,) will require 29,950,000,000 pounds of milk. Estimating 4¼ per cent. of milk sugar and we find that quantity of milk contains 1,272,875,000 pounds of milk sugar. From this deduct milk sugar found in butter—7,000,000 pounds, and it appears that 1,265,875,000 of milk sugar is run off into the buttermilk and whey and lost.

We find that the New York wholesale price of milk sugar in 1879 was 40 to 50 cents a pound.—*McKessens & Robbins' Wholesale Druggist List.*

1,265,875,000 pounds of milk sugar at 40 cents per pound	$506,350,000
" " if valued at 20 cents "	$253,175,000
" " " 10 cents "	$126,587,500
" " " 5 cents "	$63,298,750

Here we have the startling fact before us that the annual waste of milk sugar in the United States—a valuable constituent of milk—if valued at one-eighth of the New

York wholesale market price amounts to a sum greater than the entire annual sugar crop of Cuba.

On motion the convention adjourned to nine o'clock Thursday morning.

MORNING SESSION.

THURSDAY, DEC. 11.

The assembly was called to order at 9:45, the president, Dr. Tefft, occupying the chair.

TOPIC NO. 10—"Manures—Natural and Artificial—the best manner of application to the different soils"—was taken up first. Upon this question L. W. Sheldon read the following paper:

L. W. SHELDON'S PAPER.

Mr. President, Ladies and Gentlemen; In discussing this question I have not much to offer that is new. The question has been discussed at our gatherings until it is familiar to all.

What is manure? Any substance that enriches the soil. The waste at the farm yard of vegetable and animal substances, in a decaying condition, is manure or plant food. He that can make two blades of grass grow where but one grew is a public benefactor. This can be done by a judicious use of fertilizers.

As a rule, all manures should be applied to the surface soil, as fast as they accumulate. Where it is practicable, draw daily, and spread direct from the load. If for meadows or pastures, apply in fall or early winter; harrow in spring with a smoothing harrow. For corn land, apply upon fall plowing in fall and early winter. If the manure is coarse, do not hesitate to apply liberally and cultivate in in the spring. The above has proved a success with repeated trials upon sandy prairie soil. Where a three years' rotation is practicable, clover and timothy make the best of fertilizers. Land will increase in fertility by repeated heavy seeding and plowing the sod under. Clover is the farmer's friend. Sow liberally. It is a good investment to sow clover with all small grain: it is worth many times its cost as a fertilizer if not wanted for meadow or pasture.

Commercial fertilizers can be used to profit in the absence of barnyard manure. I have used bone superphosphate upon oat and corn land. With a four-years' trial it increased the yield fully forty per cent. It was applied to the surface and cultivated in. Common salt gave equally good results. In many individual cases salt has increased the wheat crop from fifty to seventy-five per cent. The profits of the farm are in what you have to sell, instead of that you buy. If we practice that which we preach, we will have to buy less and have more to sell. Let me repeat it: sow clover, and sow it liberally.

PATTEN: Was troubled with his oats lodging. It generally cost him more to have them harvested than they were worth. He would like to know how to obviate it.

SHELDON: Thought salt could be used to good advantage on all soils. It would strengthen the straw.

JUDGE LAWRENCE: Wanted to say a word against the use of artificial fertilizers. He had lately been traveling and visiting farms in New York. He inquired of some of the farmers how they kept up their soils, and he found that they were paying more for artificial manures than they got out of the land. He raised about two bushels of grain to his neighbor's one. He had a piece of soil that was naturally strong soil. It was what was called sub-soil. He ploughed that up in 1837, and, without exception, it had borne a crop of grain every year from then until 1876, when he raised a crop of clover on it. He had tried to plow the clover under, but it was so rank he could not. So far as he could see, that land was just as strong now as it was forty years ago, and the only manure it ever had was the vegetation he had ploughed under. He always spread manure on the surface, and he drew it from the barnyard as soon as made. Yet this rule would not always work. He remembered a few years ago he had a number of straw-piles, and he spread these on twenty acres of land, and planted this to corn and made 3,000 bushels of corn. The result was, next season it was better yet. Make all the manure you can. If you have any weeds on the farm, don't burn them, but pile them up and make manure. He wanted his land full of clover all the time; it was good for everything. No matter if there were some clouds, cure it as best you could; put it in the barn, if there was no water in it, and it would come out all right. He spread his manure in winter, as he drew it out. He never had any trouble about corn ripening in rich land.

SCOFIELD: Would like to know if corn would ripen as early on manured land as on poorer.

BISHOP: Yes, sir.

LAWRENCE: Knew of a man in the state of New York who took poor clay land and manured it until he finally could raise fifty bushels of wheat to the acre. When asked how he did it, he answered, "With manure, and a little more of it."

CAHOON: Told of a man who raised cattle. Some one asked him how he kept his pastures in so good a condition. He said he didn't go and buy more steers every time a fresh blade of grass appeared. Thought that was a good point. Not to skin your pastures too close.

THOS. BISHOP: Thought the aim of manure was to make the land produce more. He knew but little about it, but what manuring he did was on the surface. He sometimes ploughed it in. He never kept a field in grass very long. He was always breaking up and always seeding down. He knew but little about artificial manure. Had seen some experiments with patent manures but didn't consider them a success. He found in manuring that it didn't cost him any more to produce forty and fifty bushels of corn than to produce thirty and forty. He used to fatten a great many cattle, and found that corn raised on land that would produce 120 and 125 bushels was much better than corn raised where the yield was less. The meal was always worth more. It was the same with pasture land. He kept account of every thing in his business. He knew just what his expenses were. He had found that in buying cows for thirty and forty dollars he had made a hundred dollars. He thought this was on account of rich pasture. Had found in pasturing that a forty-acre field, where it was well manured, would keep much more stock than if it was poorly manured. It paid to keep your land manured well. This year he had raised some corn on surface-manured land and got 120 bushels to the acre, and thought that this corn was worth more than any raised on poorer land.

PATTEN: Would differ a little from Bishop. He thought that manure drawn out in piles served as a mulch and kept land from drying out.

CAHOON: His agricultural paper said that good tillage was manure, and he agreed with it.

LAWRENCE: Thought if we could get our manure on before it heated we would derive the greater benefit from it.

BISHOP: Raised a good deal of grain. His barnyard had been covered very deep with manure. He drew out when the summer work was over, and it heated in the fall. He would just as lief have a load of such as that which came from the stable.

Question No. 10 was then passed, having been pretty well discussed, and the next question, that of legislation, taken up.

M. H. THOMPSON: Said he would like to ask if the duties of the legislative committee, appointed at the last annual meeting, were considered at an end, or would the committee hold over another year.

On motion, it was decided that the same committee should hold over another year.

J. R. McLEAN: Said we needed help from the legislature to enable us to publish our proceedings and statistics. In the Southern States they knew but little about the business, and we must enlighten them by our publications. When he was down south he met a man who was in the dairy business on a small scale, who asked him if we milked our cows in this country more than once each day.

W. PATTEN: Had little faith in this matter of legislation in behalf of the association. He was, as an individual member, able to take care of himself. All he wanted was a guarantee of protection to himself and property. We wanted laws that would be a benefit to us. We could get very little out of it. Had very little confidence in these matters. Was not in favor of monopolies. If he could set no other objection to the matter, he would bring up that—objection to monopolies.

McLEAN: Said Patten didn't understand what we wanted. We were paying taxes to publish and circulate proceedings of the State Horticultural Society, which was of no more importance than the State Dairymen's Association. We wanted an appropriation to enable us to print our proceedings, and send them south, where they needed instruction.

PATTEN: Could not be hired for fifty dollars to wade through one of those lengthy state society reports, and he had seen printed reports that had cost the state $28,000, that he wouldn't give ten cents for.

MCLEAN: Knew that these reports were, as a rule, uninteresting, but he was in favor of getting up some that were readable.

DR. TEFFT: Said it was a well-known fact that they had better agriculturists on the other side of the water than we had here, and there they had their schools and gave them instruction in the matter. Our state had attempted such a school at the state institution. The dairymen of this state paid large taxes. All their property was taxed. Now, if we could get any privileges as dairymen we should get them. It was well known that we couldn't keep up a board, and we must have a station of investigation. The legislators did their work and got their pay, but didn't look to our interest. If we could, in any way, advance or improve by such, the standard of our products, we would make much. The butter product of Illinois for the year was 42,000,000 pounds. If we, by means of help, could make butter that would bring us one cent per pound more than it does, we would realize a nice little amount from it.

PATTEN: Said if you got any thing like a state board established by law you simply gave another chance for a certain class of men to get office. He agreed with Dr, Tefft fully, but he didn't want a government such as they had over the water to rule over him. He wanted to see this matter kept separate from the state. It only opened a chance for the governor to favor a few more of his friends by giving them offices. We were making good progress and got along well any way, and ought not to complain.

LAWRENCE: Would like to ask Mr. Patten if he was opposed to printing state auditor's reports. Because the masses did not read them, was it any reason that they should not be printed?

PATTEN: We got all the information needed on these subjects from the papers. He didn't need these reports.

LAWRENCE: Was acquainted with many men in the south who were in the business. Thought there were some good dairymen there who were good butter-makers. His friend, John M. Pearson, could make as good butter as could be made in this section. He thought no appropriation would ever be gotten from the state until men were sent to the legislature who had some back-bone in this matter. Then you must send those who could get their votes. Look at the industrial institute at Champaign! The officers of that institution, at one time, were practical farmers; the present ones were politicians and theorists.

M. H. THOMPSON: Said he would like to ask Patten how they were going to pay the expenses of the association and get the proceedings printed with forty-five dollars —the amount in the treasury.

PATTEN: Would say again that he thought we got all the report of such proceedings we needed from the papers. If it got to be a state institution it would soon be like the Champaign school; it would get into other hands very soon.

THOMPSON: Said the idea was this: The state votes to expend so much for the support of other organizations. We, as dairymen and farmers, pay a large portion of this tax and ought to reap a benefit ourselves.

After some scattering remarks by other members of the association the subject of legislation was dropped.

DR. TEFFT suggested that the association fix a place and time for the next annual meeting.

E. H. SEWARD, in behalf of the people of Marengo and the Kishwaukee Farmers' club, extended an invitation to the association to meet in Marengo.

On motion this invitation was accepted.

A suggestion was made that those who had received premiums on their butter be asked to donate part of their premiums to the society.

PROF. FRANK HALL, of Sugar Grove, was then introduced and read the following paper on "What will Education do for the Farmer?":

PROF. HALL'S PAPER.

A well-known Illinois educator remarks in substance as follows:

"The average Western farmer toils hard early and late, often depriving him of needed rest and sleep,—for what? to raise corn. For what? to feed hogs. For what? to get money with which to buy more land. For what? to raise more corn. For what? to feed more hogs. For what? to buy more land. And what does he want of more land? Why, he wishes to raise more corn,—to feed more hogs,—to buy more land,—to raise more corn,—to feed more hogs,—and in this circle he moves until God Almighty stops his hoggish work!"

Whether or not this is a fair criticism of the Western farmer, it is an undeniable fact, that too many of us are slow to perceive utility in any thing except that which will at once add to our material wealth.

You can measure the genius and guess the occupation of the man, who, after viewing for a moment the great Niagara casting its two millions of tons of water per minute into the chasm below, while beholding this most wonderful, this most stupendous work of nature, could exclaim "What a fine chance to wash sheep, boys!"

People are numerous who can see no value in a magnificent cataract, with all its sublimity and grandeur, unless it can be made to assist in the accumulation of material wealth—unless it can be made to turn the grindstone, water the garden, grind grain, saw wood, pump, or churn! To such persons a picture of Niagara or of Yosemite, even though executed by a Bierstadt, would be utterly useless. Their farms, their homes, their houses, their cattle, and I had almost said their wives and their children, are valued only in so far as they will aid them in making money.

I value the dollar. It is mighty, but not almighty. Under certain circumstances it is the desirable thing for a man to possess. But when a man has more dollars than he needs to satisfy his physical and intellectual wants—more money than he needs to buy food, clothes, a home and such mental privileges as he is able to appreciate, it were far wiser for him to spend his time in increasing his capacity for intellectual enjoyments, rather than in the accumulation of property which he can never use.

There is a man in Kane county who has a mania for collecting whips. Every scrap of leather is by him transformed into a whip-lash; every suitable piece of wood into a whip-stock. When I last saw him he had one thousand whip-stocks and fourteen bushels of lashes! and he was very anxious to complete another whip that day. Such a man is scarcely more foolish than he who has a mania to accumulate money beyond the amount which he has the ability to use for his own enjoyment and for the comfort and welfare of his friends and of humanity.

Intellectual development—knowledge—increases our desires, and our capacity, for enjoyment. The fool is easily satisfied. Beyond the food and clothes which are an absolute necessity, his wants can be as easily supplied with a few dollars as with millions. The more one knows the more will it take to gratify his reasonable desires.

What will education do for the farmer? It will increase his capacity for enjoyment. I speak now more especially to our wealthy farmers—men who are worth

RY U. OF I. URBANA-CHAMPAIGN

from ten to fifty thousand dollars. Among my acquaintances are such individuals; men whose annual income would be ample to provide for every want, even if they should refuse henceforth to perform physical labor. They have enough, as the saying is, "to carry them through;" and then there would be sufficient left for the heirs, to ruin a family of six children after giving the lawyers half! In their homes you will find no libraries, no pictures, no musical instruments, few carpets. They seldom attend lectures, or concerts, or even dairymen's conventions. They can't afford it. They are saving their money—for what? to buy more hogs! They have never heard of Whittier, or Longfellow, or Herbert Spencer, or Huxley. They don't know whether Shakespeare is living or dead. They are interested in European wars, because these raise the price of hogs. Almost their only enjoyments are eating drinking, sleeping, and accumulating.

What will education do for such?

I repeat, it will increase their capacity for enjoyments, and will check them in their avaricious, inordinate accumulations.

This latter is desirable. The accumulation of excessively large fortunes is oftener a curse to the heirs, and to a community than a blessing. To borrow a figure: The snow, when evenly distributed over the land, becomes a source of pleasure and profit; but when piled in drifts mountain high, it impedes travel and becomes a source of great annoyance. So with wealth; when evenly distributed, its benefits can scarcely be over-estimated; but when it "drifts" it becomes a hindrance rather than a help in the onward march of civilization. The Creator evidently so understands it; for he seldom fails to give to avaricious, grasping parents, spendthrift children who quickly scatter (with the help of the lawyers) what has been so injudiciously piled up. Indeed, I sometimes think this is why God permits lawyers to exist. (If you have a fortune which you want leveled off, for the good of humanity, employ a lawyer.)

What will education do for the farmer? It will enable him to spend more money for his own real enjoyment and for the promotion of the genuine happiness of his family and friends. It will convert hovels with bare walls and bare floors into beautiful homes with pictures and carpets and books and periodicals and musical instruments. It will give us more of those comforts and intellectual enjoyments by which civilized man may be distinguished from the barbarian. By it will our lives become more musical, more poetical—less sensual; less groveling. Creamery butter and Cheddar cheese are good for the stomach, but the mind cannot feed upon them.

What will education do for the farmer? 'Twill force him to pay ten dollars for railroad fare where he pays but one now;—to attend lectures, the theatre, expositions, agricultural fairs, farmers' institutes, and dairymen's associations. 'Twill induce him to buy a library of 200, 400, 500, or even 1,000 volumes, and a three-hundred-dollar case in which to put it. 'Twill coax him to take a longer rest at noon that he may have time to listen to the "Tales of a Wayside Inn," or a chapter from "David Copperfield." 'Twill force him to leave off work earlier at night that he may have time to read the president's message or the "Tribune's" comments thereon. 'Twill teach him oftener to leave the pig-pen and seek the parlor; not because he loves Berkshire music less,—but because he loves piano music more. 'Twill double his annual expenditure for clothing; for the old frock and old over-alls will be considered unsuitable in which to appear in the lecture room or even upon the cars. More ribbons must be bought and the dresses must be made in style, that Mrs. A. and the daughters may not be ashamed to appear in the society of cultured people. More than this,—napkins must be purchased and napkin-rings and China and silver ware, that the table may be appropriately furnished and adorned; for the educated farmer will often desire to entertain ministers, editors, and intelligent men of all classes, who are accustomed to such things. More boot-blacking will be needed, more yellow lace, more kid gloves, more red mittens, more embroidered bal-briggans, more puffs and curls and Saratoga waves, more stove polish, more pomatum, more German cologne, more paper, more postage stamps, more tooth-brushes, more scrub-brushes, more brooms, more soap and water.

I tell you, my farmer friends, this education is an expensive thing. Beware! beware! For every dollar you expend in educating your sons and your daughters beyond what is absolutely necessary in the performance of their every-day duties, you may some day be forced to pay ten dollars to satisfy the wants that the dollar's worth of education will have created!

But there is another side to this argument; not only does education increase our wants, but if a due proportion of it be of the practical kind, it, in nearly or quite the same ratio, increases our ability to earn.

It makes us of more value to the world, for which the world will cheerfully pay us. We may thus earn more, spend more, enjoy more. We may elevate ourselves, by so much, above the level of the brute. A symmetrical education simply increases a man's capacity for doing and enjoying. It doubles him, quadruples him; enables him to give more to the world and receive more from the world; makes him occupy a larger place in the universe.

If the education is truly symmetrical—if there is physical development, brain development, and heart development, it lifts him away from the brute and up towards God.

But in all this I speak of that education which is best adapted to a man's wants, ever keeping in mind the occupation or profession by which he proposes to serve humanity and gain a livelihood.

It must be borne in mind while discussing this subject that the educational field is immense. A life-time may be devoted to a survey of the merest corner of it. Zoology, botany, chemistry, astronomy, mathematics, language,—either of these subjects, the average mind cannot *master* in three score years and ten. Therefore, let it be granted that an education is desirable for all, and still the question remains: In what corner of the broad field shall the farmer, the merchant, the lawyer, labor? Shall they, hand in hand, laboriously travel over that part of the field where Greek roots once grew, and then, turning to the barnyard, together snuff the gases arising from the manure heap in the effort to detect the presence of escaping ammonia? Or shall the lawyer devote his early years to the study of those branches best adapted to the development of linguistic powers, while the farmer devotes his time, for the most part, to the acquirement of such knowledge as will be of practical utility to him in *his* life-work? How much time shall the farmer devote to language? How much time shall the lawyer devote to agricultural science? How much time can the farmer devote to the study of poetry and music, and how much time can the poet-musician afford to devote to the science and practice of agriculture? These are questions that force themselves upon us.

To return to the question assigned to me to answer: "What will education do for the *farmer?*"

If you mean by education such mental culture as is obtained in the average high school, I can answer, unhesitatingly, it will make him a lawyer or a doctor, or a minister or an editor. Or, if by chance circumstances force him to become a farmer, he does it under protest.

Teach a man German to prepare him to travel in France, and when he arrives at Paris he will realize that there is a mistake somewhere. Show a young farmer all the advantages and attractions of a mercantile or professional life, and none of those which are peculiar to agricultural and horticultural pursuits, and the chances are that he will soon abandon the country and seek the city. The farmer may love music; but if while he is still a farmer, he devotes an undue amount of time to the science of music, and utterly neglects the science of agriculture, the probabilities are that his farm will soon cease to be sufficiently remunerative to enable him to gratify his love of song.

A young man enters the high school. Immediately, he commences a course of training exactly calculated to fit him for professional or mercantile life.

Those branches of study which lawyers and doctors and editors and ministers have ever found advantageous to them in their spheres of labor, are made most prominent in the school. But not one branch of study is found which is especially adapted to the wants of the agriculturist!

Does the pupil study chemistry? He is taught that part of the science which the druggist or physician especially needs. Or he is lead to view in a most superficial manner, the science as a whole, from the standpoint of some great investigator. Of its application to agriculture he learns little or nothing. He learns the names of the elementary substances and their atomic weights, but of the compounds of which ordinary soils are composed he knows nothing. He can represent upon the black-board many of the most complicated chemical reactions, but of the effect of mixing wood-ashes and animal manures he is ignorant.

The chemistry of food (especially of the food of the herbivorous animals) is the subject of brief mention, or, perhaps is entirely neglected.

Does the pupil study botany? He will learn to define a few score of technical terms; he will become somewhat familiar with the binomial system of nomenclature; he will perhaps, analyze a few flowers and learn to speak their botanical names. All this is useful information, and very proper in its place; but why omit that part of botany which would be of most value to the agriculturist? The student is brought face to face with pretty wild flowers. He learns to recognize fifty or sixty of them, and—he has "completed botany," and triumphantly passes his "first examination" in the study. (Indeed, this is much more than is done in many schools.)

He has finished the study, but he cannot tell "a red oak from a white oak," "a hard maple from a soft maple," "a hickory from a bitternut," "a black walnut from a butternut," "a bass-wood from an ash," unless he learned it at home on the farm. The pupil has completed the study, but his attention has never been directed to the different species of weeds in the garden, or to the different kinds of grasses that are used for forage. He cannot tell a red clover leaf from a white clover leaf if they are alike in respect to size, nor does he know whether red clover is a biennial or a perennial.

As with chemistry or botany, so with other studies.

"Professional men" have, for the most part, arranged our text-books and our courses of study, and it is by no means surprising that we find therein just those branches and methods which are best calculated to fit the student for professional life.

What will modern high school education do for the farmer? I repeat, it will make a "professional man" of him; and the figures are not wanting to prove this assertion.

Of the twelve and one-half millions of people in the United States engaged in gainful and reputable occupations, not far from 3 per cent. are engaged in professional services.

Perhaps it is safe to say that the lawyers, the physicians, the teachers, the clergymen, the journalists, the artists, and the land surveyors, constitute something less than 3 per cent. of those whose vocations are remunerative and reputable.

Nearly 50 per cent. are engaged in agriculture, while the combined industries give employment to upwards of 80 per cent. of all those who, by their own labor, either mental or physical, add to the wealth and prosperity of this great republic.

Now, if it be true, as is claimed by many, that the course of study in our high schools is equally well adapted to the needs of all classes, it would be expected that not over 3 per cent. of the graduates would attempt to gain a livelihood by professional services. Either this must be true or else there is a demand for a greater proportion of professional men, which no one believes.

What are thefacts?

More than 60 per cent. of the male graduates become professional men. The vocations, present and prospective, of the male graduates of several high schools which are believed to represent fairly the high schools of Illinois, are as follows: Ministers, 14 per cent.; teachers, 24 per cent.; lawyers, 14 per cent.; mechanics, 10 per cent.; physicians, 11 per cent.; merchants and mercantile clerks, 14 per cent.; undecided, 10 per cent.; farmers, 3 per cent.

One high school in Northern Illinois, than which few rank higher, numbers among its graduates during the past twelve years, 128 persons, of whom thirty-two are males;.of these, three are mechanics, and one is a farmer. And yet they tell us that the course of study in our high schools is equally well adapted to the needs of the farmer, the mechanic, or the lawyer.

Another school, which, in point of popularity, has no superior, boasts of 29 male graduates; of this number three are farmers, and one is a mechanic.

Of the male graduates of either of these schools, not 14 per cent become handicraftsmen!

Send a young man into one of these schools in order to make an intelligent farmer of him, and before the course is half completed he will tell you he wishes to study law.

The tendency of our high school system is away from the farm, away from the workshop, and towards the pulpit and the bar.

Our present system of public education is a long and costly stairway, near the bottom of which may be found the plow, the anvil, the saw and the loom; a little higher the yard-stick and the ledger; at the top, the editor's chair, the bar, the pulpit, and the rostrum. This stairway is broad and cheap at the base, but its upper portion is narrow and expensive. It should be made throughout *as broad as at the bottom*, and should reach to the farthest height to which the would-be farmer, mechanic, and lawyer can, hand in hand, advantageously climb. Let us, as farmers, demand that if Greek and Latin and German and French and algebra and geometry and trigonometry are to be taught in the public schools, and at the public expense, that the "Elements of Agriculture" shall also be taught; this latter term to include the chemistry of soils and manures, farm botany, farm entomology, the science of breeding, the philosophy and chemistry of cream raising and of butter and cheese making, the chemistry of food, the history and peculiarities of the various breeds of cattle, hogs, horses, and sheep. More than this: let us demand that for every *three dollars* expended in the teaching of those studies, the tendency of which is *towards the professions*, fifty dollars shall be expended in teaching those subjects, the tendency of which is *towards the farm.*

This is but fair when we remember that but 3 per cent. of the twelve and one-half millions of earnest workers are professional men, while 50 per cent. are farmers.

However much we may delight in poetry and music, in painting, sculpture, history and philosophy, in culture, this fact remains: people will not, as a rule, devote years to hard intellectual toil, except they believe that in some way, and at some time, the knowledge thus acquired will become the "*basis for action.*"

And, too, to some considerable extent, at least, it must be made the basis of such action as will have a money value. Be it otherwise, and the man will have increased his desires without a corresponding increase in the means of gratifying them.

Let the education of a young man be chiefly of that practical kind which he can use in his chosen life-work, and you give him the ability to earn more dollars with which he can gratify his love for that higher education, which, although it may have little or no money value, is *invaluable.* Reverse this process: let him become enamored with poetry and philosophy and music, to the neglect of the practical education which he might use in his chosen occupation, and you have increased his expenditures and diminished his receipts. You have made him of all beings the most miserable. Hungry and thirsty, you tantalize him by showing him luscious fruit and sparkling wine just beyond his reach. Ignorance to him would, indeed, be bliss.

What will education do for the farmer? If it be that kind of education, that its results, in part, at least, may appear in his well-filled corn-cribs, in his heaped up potato bins, in better shelter for his cattle, in a more judicious selection of animals for breeding purposes, in the more perfect adaptation of food to the necessities of the animal, in better butter and more of it,—such an education he may be induced to acquire; and, having thus built a substantial educational edifice—an edifice of which the foundation stone and the frame are the "common English branches;" the siding, the roof-boards and the shingles—those branches that are especially adapted to the necessities of a farmer, he will then desire to put on a cornice of poetry, with musical modillions; an astronomical cupola, with philosophic minarets; historic balconies and fanciful arcades. Let him do it. Induce him to do it. He is as much entitled to an educational palace as the lawyer. These palaces may be equally attractive, equally spacious, but not alike. The foundation stones and frames may be similar, but *Latin roof-boards and Greek shingles will hardly keep out the rain over the head of the farmer.*

To the lawyer and minister great skill in the use of language is a necessity; to the farmer it is, at most, only a convenience. To the farmer, a knowledge of the chemistry of soils and foods and manures is a necessity; to the lawyer it is secondary in importance. Poetry and history are suitable ornaments for the farmer's educational palace—for the minister's they are substantial covering. In conclusion, permit me to say to any who may be connected with our educational system, either as teachers or school directors, if you really desire to see the industrial classes of this country brought to a higher intellectual plane, *first*, give to them these branches of study, a knowledge of which will have, to them, a money value; knowledge that they can make the "basis for action;" knowledge that will enable them to succeed financially in their chosen vocation, that they may not be burdens upon society, but that they may possess the dollars necessary to provide for the physical and intellectual wants of themselves, and of those that may be dependent upon them.

Last in order, but by no means least in importance, let us give them that knowledge which will enable them to engage, during the leisure moments of life, in such intellectual and artistic pursuits as will be gratifying to them, a benefit to humanity, and will entitle them to a high position in the social scale.

On motion, it was decided to hold the next annual meeting one week later in the month.

The committee appointed to examine the dairy implements then handed in the following report, which was read by the secretary.

THE COMMITTEE'S REPORT.

Clark's Improved Revolution Pan, we consider a very good pan for deep setting, and worthy of recommendation. It is manufactured by Conger Brothers, Manchester, Iowa.

Hawkeye Submerged Milk Pan, exhibited by J. G. Cherry, Cedar Rapids, Iowa, we would recommend as worthy of trial and use; the best we have seen for the submerged process of raising cream, and would particularly recommend it for those raising cream for factories.

Cherry's Transportation Can is an improvement on the large carrying can, and worthy of adoption.

J. F. Lester's Square Churn is so wide and favorably known that it needs no recommendation from us.

J. M. Frink,
L. Bartlett,
J. H. Foote,
Committee.

On motion of J. R. McLean, a vote of thanks was tendered to the people of Marengo for their hospitality to the visiting dairymen.

On motion, the association then adjourned to Wednesday, Dec. 15, 1880.

SECRETARY'S REPORT.

The following is the report of M. H. Thompson, retiring secretary, for the year ending December 10, 1879:

To balance on hand from last year	$ 3 04
" cash for report	25
June 11, to cash of R. M. Patrick, Treasurer	75 50
	$78 79
CONTRA.	
June 11, by cash paid for printing reports	$60 00
" " sundry items, printing, express, telegrams, etc	3 40
Cash on hand to balance	15 39
	$78 79

Marengo, Ill., Dec. 11, 1879.

REPORT OF COMMITTEE ON LEGISLATION.

The following report of the committee on legislation was handed to the secretary since the meeting of the association:

Dr. Joseph Tefft, President of the Illinois State Dairymen's Association—SIR: The committee of your association, charged with the duty of presenting to the legislature the interests of the dairy industry, for the purpose of obtaining such aid from the state as its necessities demand, would respectfully report that in the month of March last they went to Springfield and presented to a committee of both branches of the legislature the following statement:

First, The importance of the dairy industry.

The following statement will show the magnitude and value of this branch of industry in the state of Illinois:

From the census returns of 1870 (the last actual data) it appears that the number of milch cows then in the state was 640,321. Estimating the increase at 25 per cent. during the last eight years (and this increase in number is not equal to the increase in the dairy product during that time), and we now have 840,421 cows in this state. We adopt 800,000 as the basis of our estimate.

Without taking into account the men and horses required for distributing milk to families in our cities, and the men engaged in the manufacture of butter and cheese, we find that it requires the labor and care of at least one man for every twenty cows, a span of horses for every thirty cows, and about four acres of land for the support of one cow; so that 800,000 cows require the care and labor of 40,000 men, the work of 60,000 horses, and the product of 3,200,000 acres of land.

VALUE OF COWS, HORSES AND LANDS.

800,000 cows, at $30 each	$24,000,000
60,000 horses, at $80 each	4,800,000
3,200,000 acres of land at, $30	96,000,000
Total value	$124,800,000

FEEDING.

It is understood by the dairymen of Illinois that the quantity and quality of the feed (other things being equal) is the measure of the quantity and quality of the milk of the cow, and so they have adopted a liberal system of feeding. Eight quarts of oat and corn meal mixed, fed daily for 240 days in the year, and, in addition, one-quarter ton of bran and two tons of hay to each cow (or feed equivalent to it), would not be above the average feed for cows in the dairy district.

FEED REQUIRED.

If so fed, the 800,000 cows would require 24,000,000 bushels each of corn and oats, 200,000 tons of bran, and 1,600,000 tons of hay. And the horses, fed eight quarts of oats and corn daily (or its equivalent), with two tons of hay each per annum, would require, for the 60,000 horses, 2,700,000 bushels each of corn and oats, and 120,000 tons of hay. Thus making a total of 26,700,000 bushels each of corn and oats, 200,000 tons of bran, and 1,720,000 tons of hay, or feed equivalent to it, for the annual supply of the cows and horses.

VALUE OF THE FEED.

26,700,000 bushels of corn, at 30 cents	$8,010,000
26,700,000 bushels of oats, at 20 cents	5,340,000
200,000 tons of bran, at $9	1,800,000
1,720,000 tons of hay, at $5	8,600,000
Grinding 48,000,000 bushels of oats and corn for cows, at 4 cents	1,920,000
Value of feed used annually	$25,670,000

VALUE OF LABOR.

40,000 men, at $200 per annum	$8,000,000

COST OF DAIRYING.

Value of feed used annually	$25,670,000
Value of labor of men	8,000,000
Depreciation and loss on stock, 5 per cent. on $28,800,000	1,440,900
Total value of feed and labor and loss on stock	$35,110,000
An average, per cow, of	$43.88

To this amount should be added a sum equal to the value of the work of 60,000 horses, the annual outlay for necessary repairs, and the amount of insurance and taxes on the property used in dairying, as also the value of the summer pasturage for the stock. Having no exact data for these items, they do not enter into our estimate of the cost of dairying.

Second, Attention was called to the food value of the annual milk product of the United States.

Assuming that there are now in the United States 13,000,000 milch cows, and estimating their average annual yield of milk at 446 gallons each, this being the average yield of milk in thirteen states in 1860 (Willard's "Dairy Husbandry," p. 20), and we find the annual milk product in the United states amounts to 5,798,000,000 gallons, weighing 50,732,500,000 pounds.

Willard in his "Practical Dairy Husbandry," p. 13, states that "three and one-half pounds of milk" has a nutritive value "equal to one pound of boneless beef." That being true, makes the food or nutritive value of the annual milk product of the United States equal to 14,495,000,000 pounds of beef, free of bone.

We also find that every 100 pounds of a fat ox gives 57.7 per cent. of butchers' meat.—*Encyclopedia Britannica, 8th ad., vol. 9, p. 762.*

About 12½ per cent. of such meat is bone.—*Same work, p. 765.*

We find therefore that 50 per cent. of the gross weight of a fat steer is boneless meat. It will therefore require 20,650,000 fat steers, weighing 1,400 pounds gross, to produce 14,455,000,000 pounds of boneless beef, and that this only equals the food or nutritive value of the annual milk product of this country. The present market value of such fat steers would not be less than $4.50 per 100 pounds live weight. The market value of that number of fat steers would amount to $1,300,950,000. To ascertain the value of the meat, we deduct one-fifth for hides and tallow, $260,190,000; which leaves $1,040,760,000 as the market value of the beef that would be required to furnish an amount of nutrition that is only equal to that of the annual milk product of this country.

Third, Your committee further called attention to the loss of milk sugar—one of the most valuable constituents of milk—in the process of making butter and cheese. In order to do this we must ascertain the percentage of milk sugar contained in milk.

Milk contains 4.20 per cent. of milk sugar.—*New American Cyclopedia, vol. 11, p. 543, sample 8.*

Milk contains 4.50 per cent. of milk sugar.—*Willard's Practical Dairy Husbandry, p. 500.*

Skimmed milk contains 4.66 per cent. of milk sugar. —*Same work and page.*

Buttermilk contains 4.66 per cent. of milk sugar.—*Same work and page.*

Whey contains 4.61 per cent. of milk sugar.—*Same work, p. 319 (average of 15 samples).*

Butter contains 0.70 per cent. of milk sugar.—*Same work, p. 500.*

Cheese contains lactic acid, or but little milk sugar.

The wholesale market price for milk sugar in the spring of 1879 was forty to fifty cents per pound, as appears from the price-list of McKesson & Robbins, wholesale druggists in New York city.

1,265,875,000 pounds	of milk sugar,	at 40 cents, amounts to	$506,350,000
do	do	at 20 cents, amounts to	253,175,000
do	do	at 10 cents, amounts to	126,587,500

Here we have the startling fact that the annual loss on milk sugar in this country, if valued at one-fourth the lowest New York market quotations, amounts to more than double the value of the entire sugar crop of the Island of Cuba.

Fourth, Your committee further stated that while our creamery butter, when first made, is of superior quality and flavor, and, therefore, commanded the highest market price, we have already learned from experience that it is very soon off flavor, and unless marketed and used within a limited time it deteriorates in value. For this reason it must necessarily be confined to home markets, as it is not safe to ship it abroad with the expectation that it will retain its flavor so as to compare favorably with the best shipping grades of butter that may be found in the London markets. *Willard's D. H., pp. 340, 341, 342.*

From all these analyses it appears that all, or nearly all, of the milk sugar is "run off" in the buttermilk and whey, and lost.

In manufacturing butter and cheese 59 per cent. of the milk product is used, and 41 per cent. is consumed in families—as stated in "Willard's Dairy Husbandry," page 20.

Chemical tests show 4 pounds of butter in 100 pounds of good milk; but as there is some loss in churning, we estimate that it will require an average of at least 27 pounds of milk to produce one pound of butter.

From the department of agriculture report for 1877, p. 343, it appears that we make 1,000,000,000 pounds of butter annually, requiring for its product 27,000,000,000 pounds of milk.

It requires an average of 9¾ pounds of milk to produce one pound of cheese. *Willard's D. H., pp. 524, 525, 526, 527.*

The department of agriculture, in their report for 1877, p. 343, place the annual product of cheese at 300,000,000 pounds, requiring for its production 2,950,000,000 pounds of milk. The milk used in manufacturing butter and cheese contains 1,272,875,000 pounds of milk sugar. From this deduct for amount in the butter, 7,000,000, which leaves 1,265,875,000, run off annually in the buttermilk and whey.

Fifth, Your committee further stated that, while it is true that the dairy farmers feed their milch cows corn meal, oat meal and bran in liberal quantities; and while it is admitted that this is the best food for producing a superior quality of milk, the truth is that the cheese we produce does not rank as good in quality or bring as high prices as cheese produced in other countries, even while the analysis shows them to be as rich in butter, and that, therefore, there is no legitimate reason for that difference in quality.

In view of these facts, your committee feel justified in asking the legislature to appropriate a sum sufficient to enable the Illinois State Dairymen's Association to establish an experimental station for the purpose of ascertaining, by actual tests,

1st, How to improve the keeping quality of our creamery butter, so that it may be transported, with its flavor unimpaired, to the best markets of the world.

2d, How we can improve the quality of our cheese, so that it will sell at as high prices in the English markets as cheese produced in other countries.

3d, To ascertain the best method of saving the sugar of milk which is now run off into the buttermilk and whey.

In conducting such a station it seemed desirable to ascertain, as far as practicable, the best and most reliable breeds of milch cows—or those best adapted to the American system of dairying.

While the legislature of this state makes liberal appropriations to the agricultural and horticultural societies, and regularly appropriates about $12,000 per annum for county fairs, we regret to state that though they could not controvert the arguments, and were surprised to learn the facts, and could not but recognize the needs of the dairy industry, they did not feel justified in making the appropriation. The whole thing was so new to them as almost to take them by surprise.

The experiences of the dairy farmer during the year now drawing to a close have been such as to show the absolute necessity of making more strenuousefforts in this direction, if they are to continue in this business.

At the request of the committee, C. H. Larkin and J. R. McLean accompanied them to Springfield, and, therefore, join in this report.

G. P. Lord,
M. H. Thompson,
Joseph Tefft, } Committee.
C. H. Larkin,
John R. McLean,

JUDGES' REPORT.

The following tables show the number of points credited to each exhibitor of butter, for the different premiums, offered at the sixth annual meeting of the Illinois State Dairymen's Association, held at Marengo in December, 1879. Instead of the exhibitor's name, his number is given. This will enable each one to see in just what particular his butter failed, or was perfect:

BOARD OF TRADE SWEEPSTAKES PREMIUM.

[Owing to some oversight the report on the other numbers entered for this premium was not handed to the secretary.]

Entry No.	Flavor.	Make.	Texture.	Keeping	Color.	Salt.	*Total.
133	8	8⅔	9⅓	7⅔	4	5	42⅔
31	8⅔	8⅓	9⅓	8⅔	4	4⅔	43⅔
44	9⅔	9⅔	9⅔	9⅓	5	5	48⅓
112	8⅔	9⅔	9⅓	9	4⅔	5	46⅓
36	9	9	9⅓	8⅔	4⅔	4⅓	45
116	8⅓	9	8⅓	8	4⅓	5	43
115	8⅔	9⅔	9⅓	9⅓	4⅔	5	46⅔
120	9	9	8⅔	8⅓	4⅓	4⅔	44
118	8⅓	8⅔	8⅓	7⅓	5	4⅔	42⅓
145	9	9⅔	9⅔	9⅔	4⅔	5	47⅔
42	9	9⅔	9⅔	10	4	4	46⅓

HIGGIN SALT COMPANY'S PREMIUM.

Entry No.	Flavor.	Make.	Texture.	Keeping.	Color.	Salt.	Total.
129	8⅓	8⅔	8	7⅔	4⅔	4⅓	41⅔
26	8	8⅓	7⅔	8⅔	4⅔	4	41⅓
125	9	9	8⅔	8⅓	5	3⅔	43⅔
2	8⅔	8⅓	8	8⅓	5	4⅓	42⅔
48	8⅓	9	9⅓	8⅓	4⅔	4⅓	44
22	8⅔	9⅓	9⅔	8⅓	4⅓	4⅔	45
52	7⅓	8⅓	8⅓	8⅔	4⅔	2⅔	40
127	7⅔	8⅓	8	7⅔	4⅔	4⅔	41
43	9⅓	7⅔	9⅓	8⅔	4⅓	4⅔	44
142	8⅔	8	8⅔	8⅔	4⅔	4⅔	43⅓
70	8⅓	8⅓	8⅔	8⅓	4⅔	4⅓	42⅔
144	9	9⅔	9⅓	9⅓	4⅔	5	47
66	7⅔	8⅓	8	8	4	4⅓	40⅓
10	8⅔	9⅔	9⅓	8⅓	4⅔	4⅔	45⅓
63	8⅔	9⅔	9	8⅔	4⅔	4⅓	45
40	9⅔	8	8	8	4	3⅓	41
59	7⅔	8	7⅔	7⅔	4	4⅓	39⅓
90	9	9	8⅔	8	3⅔	3⅔	42
119	9	8⅔	8⅓	8⅓	4⅓	5	42⅔
93	8⅔	8⅔	7⅔	7⅔	4⅓	5	42
30	9⅓	8⅔	9	8	4⅓	5	42⅓
95	8⅓	9	9	8⅓	4⅓	5	44
114	8	7⅔	8⅔	8⅓	4⅔	5	42⅓
97	9⅓	9⅓	9⅓	9	4⅔	5	46⅔
117	8	8⅔	8	8	5	4	41⅔
108	8⅔	8	8	7⅓	4	4⅔	40⅔
122	8⅓	8⅓	8	7⅓	4	4⅔	40⅔
104	9⅓	8⅓	8⅔	8⅓	5	4⅔	43⅓
34	8	7⅓	7⅔	7⅔	4⅓	4⅓	39⅓
100	8⅓	7⅔	7⅔	7⅔	4⅓	4⅔	40⅓
111	9	9⅓	9⅔	8⅔	5	5	46⅔
18	9⅓	9⅔	9⅓	8⅔	5	5	47
86	9⅔	9⅔	9⅓	9⅓	5	4⅔	47⅔
37	7⅓	8⅓	7⅓	8	4⅔	4⅓	41
82	7⅓	8⅔	8	7⅔	5	4⅔	41⅓
14	6	7	7⅓	7⅓	4⅓	4⅓	36⅓
79	8⅔	8⅔	8⅔	7⅓	4⅔	4⅔	42⅔
139	8⅓	8⅓	8⅓	7⅔	5	4⅓	42
76	8⅔	9⅔	9⅓	9	4⅔	5	46⅓
135	9⅔	9⅔	9	9	4⅓	4⅔	46⅓
56	8	8⅓	8	8	4⅔	4⅓	41⅓
137	8	8⅔	8⅓	8	4	5	42
132	9⅓	9⅓	9	8	4⅔	4⅔	45

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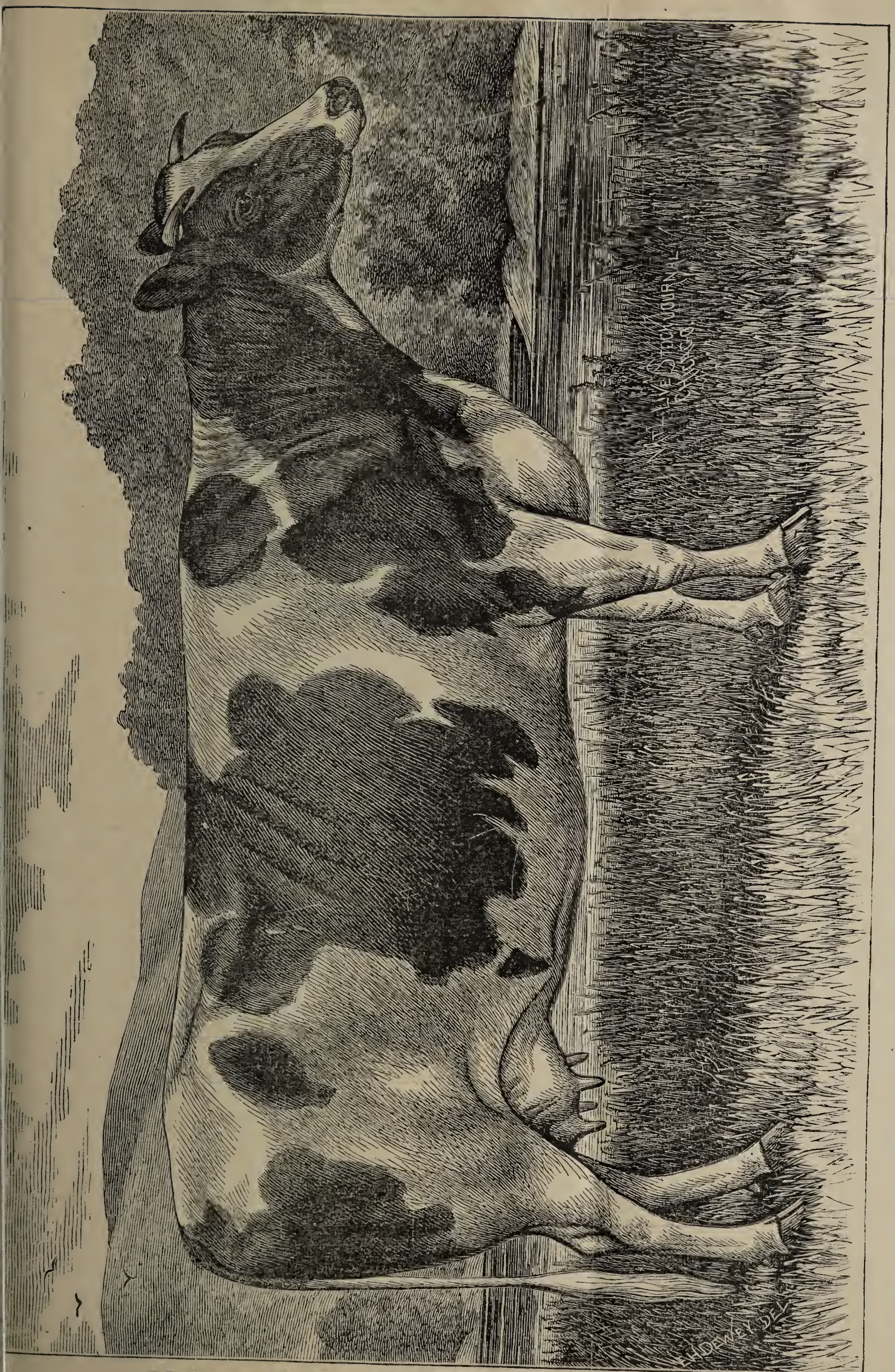
*Scale of points—flavor, 10; make, 10; texture, 10; keeping, 10; color, 5; salt, 5—50.


NAT. LIVE STOCK JOURNAL CHICAGO
H. DEWEY DEL.

Holstein Heifer, "MINNIE WINKLE."

[illegible]

ASHTON SALT COMPANY'S PREMIUM.

Entry No.	Flavor.	Make.	Texture.	Keeping.	Color.	Salt.	Total.
47	6⅔	6⅓	7⅔	6⅔	4	3⅔	35
131	6⅔	6	6⅔	4	2⅔	4⅓	30⅓
61	6⅔	8⅓	8	7⅔	4⅔	4⅓	39⅔
113	7	6⅓	6⅓	5⅓	4	4	33
51	6⅓	7⅓	8	6⅓	4⅔	3⅔	36⅓
33	8⅓	8⅔	8	8⅓	4⅓	4⅔	42⅓
65	6	5⅓	5⅓	5	4	4	29⅔
121	6⅓	6	5⅓	5⅓	3⅔	4	30⅔
69	9	8⅓	9	7⅓	4⅔	5	43⅓
107	7⅔	8	7⅔	7⅓	4⅓	4⅔	39⅔
55	8⅓	8	7⅔	7⅓	4⅔	4⅔	40⅔
49	7⅓	7⅓	7⅓	7	4⅔	4⅔	38⅓
73	8	8⅔	9	8	5	4⅔	43⅓
103	7⅓	7⅓	6⅔	7	4	4	36⅓
75	8	8⅓	8⅔	8⅓	4⅔	4⅔	42⅔
45	9	8	9⅓	8⅔	4⅔	4⅔	44⅓
81	8⅔	8	8⅓	8	4⅓	4⅔	42
89	8⅓	8⅓	8⅓	7⅔	4⅓	4⅔	41⅔
85	9	9	9⅔	8⅔	5	4⅔	46
39	9⅓	8	8	8	4	4⅔	42
141	7	8	7⅓	7	4⅔	4⅓	38⅓
146	9	9⅔	9⅓	9	4⅔	4	45⅔
13	9	9	9	8⅓	4⅓	4⅔	44⅓
9	9⅔	8⅓	9⅓	8⅔	4⅓	4⅔	45
17	9⅔	8⅔	8⅔	9	4⅓	4	44⅓
21	9⅔	9⅓	9	8⅔	4⅔	4⅔	46
25	7⅔	8⅔	8	7⅔	4⅓	4	40⅓
1	9⅓	9	9	8⅓	4⅓	4⅔	44⅔

STANDARD QUANTITY AND QUALITY OF MILK.

QUANTITY.— Borden's standard — of eight and five-eighths pounds per gallon — is now taken and accepted as the standard for milk, not only in our own country, but in all Europe.

QUALITY.— The executive committee of the State Dairymen's Association, after many experiments carefully made, have decided that hereafter the following shall be considered by them as the standard quality of milk in Illinois: Water, 87.5; solids, 12.5 — in a scale of 100 parts.

AGRICULTURAL
EXPERIMENT STATION.
JAN [illegible]
UNIVERSITY OF ILLINOIS.

PROCEEDINGS

OF THE

ILLINOIS

STATE DAIRYMEN'S ASSOCIATION,

AT ITS

SEVENTH ANNUAL MEETING,

HELD AT

MARENGO, ILLINOIS, DECEMBER 15, 16, 17, 1880.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

R. P. McGLINCY, Secretary.

The Eight Annual Meeting will be held at Dundee, Ills., December 15, 16, 17, 1881.

ELGIN, ILL.:
ELGIN LEADER PRINTING AND PUBLISHING HOUSE.
1880.

OFFICERS FOR 1881.

PRESIDENT,
DR. JOSEPH TEFFT, ELGIN, ILL.

SECRETARY,
R. P. McGLINCY, ELGIN, ILL.

TREASURER,
R. M. PATRICK, MARENGO, ILL.

VICE-PRESIDENTS,
C. C. BUELL, ROCK FALLS, ILL.,
S. W. KINGSLEY, BARRINGTON, ILL.,
E. H. SEWARD, MARENGO, ILL.,
J. R. McLEAN, ELGIN, ILL.,
ISRAEL BOIES, DAVIS JUNCTION, ILL.,
I. H. WANZER, ONEIDA, ILL.,
L. B. PARSONS, FLORA, ILL.,
H. W. MEADE, HEBRON, ILL.,
N. ELDRED, GILMAN, ILL.

The eighth and next annual meeting will be held at Dundee, Illinois, December 15, 16 and 17, 1881.

A. A. 1852

MEMBERS
OF THE
ILLINOIS STATE DAIRYMEN'S ASSOCIATION
FOR 1881.

Dr. Joseph Tefft	Elgin,	Illinois
W. J. Anderson	“	“
R. P. McGlincy	“	“
C. H. Larkin	“	“
C. C. Church	“	“
C. W. Gould	“	“
G. P. Lord	“	“
E. C. Lovell	“	“
O. P. Chisholm	“	“
D. F. Barclay	“	“
J. R. McLean	“	“
E. D. Waldron	“	“
Benj. Cox	“	“
F. W. Wright	“	“
Hon. S. Wilcox	“	“
Guy Adams	“	“
O. B. Weld	“	“
A. D. Gifford	“	“
S. E. Weld	“	“
Jonathan Tefft	“	“
M. H. Thompson	“	“
G. S. Chisholm	“	“
T. W. Tefft	“	“
Hawthorne Bros.	“	“
E. G. Ketchum	“	“
I. C. Bosworth	“	“
M. C. Town	“	“
O. F. Lawrence		
W. A. Boies	Marengo,	Illinois
R. M. Patrick	“	“
A. Thompson	“	“
L. E. Goodrich	“	“
E. L. Heath	“	“
J. M. Frink	“	“
J. F. Lester	“	“
Patterson Pringle	“	“
W. W. Bingham	“	“
Peter Simpson	“	“
S. K. Bartholemew	“	“
Lester Barber	“	“
E. P. Vail	“	“
Ira R. Curtiss	“	“
J. L. Riehl	“	“
Calvin Spencer	“	“
C. L. Carpenter	“	“
F. G. Hackley		

J. F. Hall	“	“
A. D. Bliss	“	“
W. J. McDowell	“	“
L. W. Sheldon	“	“
J. Brotzman	“	“
John McLean	Woodstock	Illinois
T. McD. Richards	“	“
G. W. Hicks	“	“
Waldo Joslyn	“	“
J. H. Foote	“	“
C. N. Webber	“	“
Farmers Review	Chicago,	Illinois
J. G. Lumbard	“	“
Charles Baltz	“	“
Western Rural	“	“
C. C. Buell	Rock Falls, Ogle Co.,	“
O. S. Cohoon	Belvidere,	“
L. W. Dawrence	“	“
S. W. Kingsley	Dundee, Kane Co.,	“
H. C. Edwards	“ “ “	“
Ed. Morse	“ “ “	“
E. V. Lapham	Morrison, Whiteside Co.,	“
Geo. Sands	Capron, Boone Co.,	“
Calvin Gilbert	Union, McHenry Co.,	“
E. C. Hayes	Kings, Ogle Co.,	“
H. H. Beldin	Union, McHenry Co.,	“
S. M. Fan	“ “ “	“
James Mills	“ “ “	“
Israel Boies	Davis Junction,	“
Joseph Mullis	Harmony, McHenry Co.,	“
Geo. Olmstead	Genoa, DeKalb Co.,	“
M. H. Underwood	Riley, McHenry Co.,	“
N. Eldred	Gilman,	“
L. B. Parsons	Flora,	“
I. H. Wanzer	Oneida,	“
H. W. Mead	Hebron,	“
A. D. Albro	Wayne,	“

HONORARY MEMBERS.

Mrs. C. C. Church	Elgin,	Illinois
“ F. S. Bosworth	“	“
“ Frank Crosby	“	“
“ Geo. Sands	Capron, Boone Co.,	“
“ A. Patrick	Marengo,	Illinois
“ R. M. Patrick	“	“
“ L. Woodard	“	“
“ J. T. Wells	“	“
“ Eliza K. Brown	“	“
“ W. W. Bingham	“	“
“ L. W. Sheldon	“	“
“ S. K. Bartholemew	“	“
“ L. Barber	“	“
Miss Virginia Bingham	“	“
“ Kate D. Shurtleff	“	“
“ Francis E. Hunt	“	“

U. OF I. URBANA-CHAMPAIGN

TRANSACTIONS
OF THE
SEVENTH ANNUAL MEETING
OF THE
Illinois State Dairymen's Association.

Held at Marengo, Ill., December, 15, 16, 17, 1880.

The Association was called to order at 2 p. m. on Wednesday, December 15, 1880, Dr. Tefft, president, in the chair.

The president introduced R. M. Patrick, of Marengo, who delivered the following

ADDRESS OF WELCOME.

Mr. President and Members of the Illinois State Dairymen's Association:—In the absence of the Hon. Ira R. Curtiss, who was selected to deliver the Address of Welcome on this occasion, I have been requested in behalf of the citizens of Marengo, and the dairymen of the surrounding country, to bid you a hearty welcome to our homes on this, the seventh annual re-union of the Illinois State Dairymen's Association.

The great progress made in the dairy regions of the Northwest during the last few years, and the many benefits derived from these annual re-unions, and the discussion of the various topics which directly interest the dairymen should induce every dairyman in Northern Illinois to meet once each year for consultation, benefit, and recreation.

Notwithstanding the seeming great prosperity of the dairy interests in the Northwest, these interests never before stood in so great danger from the many new inventions and devices for adulterating both butter and cheese as at the present time.

These adulterations of butter and cheese by the substitution of lard and tallow, are becoming so great that it is high time that every dairyman throughout the great Northwest should join hands in suppressing these great frauds which are now sapping the foundations of every dairyman's industry.

One other great evil which now threatens the future prosperity of dairymen is the manufacture of cheese so heavily skimmed as to make it nearly unfit for food, and which beyond a doubt is rapidly reducing the consumption of this article in our own country and has recently so cut down the exports of cheese to Europe as to make it nearly impossible to sell for export the cheese made in Northern Illinois. It is safe to say that these two causes combined have caused nearly all the decline in the price of this class of cheese during the last two months.

The subjects outlined for discussion at this meeting are among the most important ones presented to this association for discussion since its organization.

Though but a few names among the many hundreds of prominent dairymen in Northern Illinois, appear upon the programme presented you, doubtless most practical dairymen present will be called upon to give their views and the result of their experience upon the subjects presented, and it is hoped that these discussions and comparison of views by practical men may so benefit and interest all who may attend these meetings that they may go from here feeling that the time spent at the meeting has been pleasantly and usefully employed. Again I bid you a cordial welcome to our homes.

At the conclusion of Mr. Patrick's address, the president introduced R. P. McGlincy, of Elgin, who responded on behalf of the Association as follows:

MR. PRESIDENT, CITIZENS OF MARENGO, GENTLEMEN:—On behalf of the Illinois State Dairymen's Association, I accept the hearty, cordial welcome you have extended to us, and trust that our sojourn in your beautiful town may be to us as pleasant as your welcome is cordial. I fear, however, if you knew that you were welcoming this Association, with anti-huff, oleomargarine, suine and other questionable compounds, which of late have been given prominence by those who seem to be determined to make something out of nothing, and that too to the injury of the legitimate dairy industry. But while we bring these things to you, we bring them in a shape wherein we can ask your co-operation in stamping them out of existence, and unless honest dairy goods can rid the country of these palpable frauds the producers of the milk, the manufacturers of butter and cheese, and the consumers will suffer from these frauds. With united action, wise counsels and a determination to produce the very best, we may succeed in driving out of the markets, anti-huff, which has ruined a large number of Western cheese; lard cheese, which must ultimately ruin our production; oleomargarine, and suine, which destroy the sale of our genuine creamery butter. While we bring these things to your notice rest assured that this Association will put its seal of condemnation on all such frauds, and asks you, citizens, to aid it in its good work. Again we return you our unfeigned thanks for your generous hospitality, and words of good cheer, and trust you will have no cause to regret the welcome you have accorded us.

ANNUAL ADDRESS OF THE PRESIDENT.

FELLOW CITIZENS, MEMBERS OF THE ILLINOIS DAIRYMEN'S ASSOCIATION:—Ladies and gentlemen, we meet here to day as American citizens under the time-honored privilege of associating ourselves together for the purpose of spending a few hours in social communion and mental improvement.

The year now passed has been one replete with many incidents of deep and abiding interest to the dairymen of this country, and especially so to those of Illinois.

In the early part of last season or that of 1879 some of the products of the dairy were put upon the market and sold for little more than a nominal figure. Then went up the cry of over-production, and many dairymen became alarmed, and not a few prepared to close their dairies.

A short time prior to this the United States prepared to resume specie payment, the result of which has been good money and plenty of it too. You ask what this has to do with the dairy interests of this country. Well, let us see, money being plenty, every honest laborer who desired to work has had plenty to do and good pay for his labor. The result of this has been a much larger home consumption of both butter and cheese than of yore.

The evidence of this is in the fact that this country never produced a larger amount of dairy products for the same length of time than it has in the present season. While this increase of production has been going on, the exportation of butter from January 1, to Dec. 1, 1880, has fallen behind that of last year for the same time 7,466,448 pounds, and the exportation of cheese has dropped off 4,401,489 pounds for the same time, and yet there has been no glut of the markets of either of these articles; on the contrary the demand has been so great for the products of the dairy that it has stimulated the Frenchman, Yankee, or some other inventive genius to adulterate good butter and put it upon the market as gilt-edge creamery.

In this adulteration of butter we are informed that talc or what is commonly known as soap-stone has been used to considerable extent in the U. S. Then to cap the climax a Western city known to the world as the largest packer of the suilline quadruped have taken it into their heads to adulterate butter with some of the products of the slaughter-house and give it the euphonic name of suine or butterine. We have seen of this butter that contained 66 parts of hogs' lard or other grease, leaving but a small part of the original butter in the compound, and yet we are informed that this manufactured suine has been put upon the market, and sold to unsuspecting purchasers as fine creamery butter and at full price of that article. As we are passing on you will please allow us to cast a thought at oleomargarine, a substance made by churning milk, cream or butter-milk with tallow oil, refuse grease, and some other admixture. We have been informed that recently the use of oleomargarine has been condemned by the French government as unwholesome food for Frenchmen to eat, although of French origin.

We cannot consent to pass this subject without giving you a hint on the adulteration of cheese. The great desire to make much out of little or nothing, has induced some of the factorymen of our country to experiment in the use of foreign substances in the process of cheese making. First came a mixture of buture with cheese, next oleomargarine put in its appearance and so also did hogs' lard and deodorized grease, and lastly, or more recently, anti-mottling and anti-huffing compounds raise their hydra heads and make their mark wherever they go. We are forced to believe that the active principles of those last named compounds consist of carbonate, or caustic soda and potash. It would appear to a careful observer that some, yea, many, who inhabit this continent, (saying nothing of others) believe the human stomach of the American people to be made of cast iron and lined with antediluvian case-hardened copper, judging from the amount of adulterated food found on the markets of our country. We have invited your attention to this subject, not because we wish to agitate this question to the injury of the honest manufacturer of any product or food for the human family, but solely for the purpose of provoking some action of this convention looking towards some legal enactments by the powers that be to protect the honest people of the United States from this slow, painful, yet sure slaughter of human beings by the wholesale adulteration of their food and medicine. The time has come when the people, yea, the whole people of our country, should rise in their might and proclaim their determination to have some important

butter

change brought about on this subject. A subject of vastly more importance to all, than has been before the American people for the last decade.

Under the present existing state of things, would it not be eminently proper for every manufacturer to put upon the package containing his goods his name and place of business? While possibly it might not be of use to him, still we fail to see wherein it would be likely to injure him, if he is an honest man and produces an honest commercial article. We can but see that in course of time it would redound largely to his benefit. An honest reputation in any business is the best stock that a man can put in trade. If rightly nurtured and cared for, it will stand by him when dollars and cents have fleeted away and are gone. Now while we might not wish to detract in the least from the old adage that an honest man is the noblest work of God, we would most emphatically say that an honest man is the noblest work of his own nature or conscience.

He has it in his power to so conduct himself as to be honored and respected by his fellow man.

You will please allow us to reiterate a part of what we have already said that the exportation of dairy product~~s~~ has largely diminished within the last year. We ask why this should be so? Have not the Europeans used the dairy products as largely the present season as heretofore?

Can it depend upon the quality of the goods we have put upon their markets?

We are aware that a large amount of oleomargarine and suine or butterine has gone forward to fill the place of honest butter; how much this has had to do in diminishing the amount of butter exported, we do not know. We fear that the quality of cheese is not as good as it should be for exportation. It would hardly be possibly that the difference in the price of either butter or cheese between 1879 and that of 1880 (which we figure for the 11 months on an average of three cents and nine mills per pound on cheese and four cents and two mills on butter as per Elgin Board of Trade) would be sufficient to cause the drop in the exportation of the present year. It would appear that this matter should receive the careful attention of the dairymen or factorymen of Illinois. The manufacture of butter and cheese in Illinois must be largely on the increase if we are allowed to judge by the reported sales of this season as compared with former seasons on the Elgin Board of Trade. The present season is far in excess of that of any other year since the organization of said Board.

Some three years ago a committee was appointed by the convention for the purpose of petitioning the legislature for the enactment of a law placing the Illinois Dairymen's Society on a standing with the Horticultural Society and other like associations of the state; also to establish an experimental dairy station for the benefit of the dairymen of Illinois. This committee made a report last year and was continued another year. The legislature not having been convened during the past year we presume the committee will have but little progress to report.

If Illinois had had such a station in successful operation the present season it no doubt would have saved the manufacturers of dairy products thousands of dollars in the few experiments made by them this season in trying to better their cheese so as to realize a larger dividend for the dairymen who produced the milk for them to make up.

In conclusion we would say that the old year is about to depart leaving us with a fair market and no accumulation of strictly gilt-edge butter or prime cheese on hand. The inception of the new year will then find us with a market open and ready to receive and pay a fair price for strictly prime goods.

This being the case it stands the producers of milk in hand together with the factorymen to look closely to the articles which they are about to put upon the market the coming season. The time must soon come when dairy products will be sold strictly on their merits. It is highly important to dairymen that an article sufficiently good in quality be made to recommend itself to the people of our country as a wholesome and valuable article of food for the many.

It is a well established fact that the people of our country only consume about 4½ pounds of cheese per capita while the people of England consumes about 14½ pounds per capita, annually.

Good cheese will compare favorably with the best of our foods. Not excepting beef and pork.

Then why should we not eat it more freely? The answer is simply because a prime article cannot readily be obtained.

It would seem that the best interests of the manufacture of this great staple would be to produce a better article and thereby stimulate a larger home consumption.

A home market is the best of all markets if sufficiently active.

The future prospects of this great industry in our country depends very much upon the course taken by those having charge of the same. With proper care and judicious management it may become a lasting benefit to the dairymen and the country at large.

The programme was then taken up.

On Topic No. 1, "Which is the More Profitable to the Dairymen, to Deliver Milk Once or to Deliver it Twice per Day?" H. C. Edwards, of Dundee, was called upon and said he could not give any information in the matter, that would be of value. Had shipped milk to Chicago for 12 years and had had no experience in carrying to a factory. At one time, however, he had instead of shipping the milk, skimmed the milk and shipped the cream to the amount of two cans per day. He had tried making butter out of the second skimming from the milk, but the experiment was a failure. From this fact he judged that it was better for the milk to be handled but once and consequently delivered to factories twice per day.

C. C. Buell should much regret to see the question dropped at this point. The question is: Which is the more profitable to the dairyman, and the answer should be to that point and should come from a man who handles milk. He had handled milk where he found it necessary to let the cream stand 12 hours before he could make butter, and he had at times when making butter in the winter, warmed his milk before setting it, and his experience had satisfied him that it was just as profitable, to say the least, to deliver but once per day.

S. K. BARTHOLEMEW: If milk is used for the manufacture of butter exclusively it should be delivered twice per day. When delivered this way more butter can be manufactured, than from the same amount delivered once; but if cheese is also manufactured it will be found that the cheese is of a poorer quality. He was thoroughly convinced that it would be greatly to every farmer's advantage, if he lived convenient to a factory, to deliver his milk twice per day. In answer to a question by R. M. Patrick he said he thought if milk was handled as it should be there would be little or no loss of cream in carrying it after it had set over night. He thought, however, that if the cream is not skimmed, and full cream cheese is made from milk thus handled, there will be a loss of cream. It will be seen to float on the whey after it is drawn off. If a farmer lived a long distance from a factory, he believed it more profitable to take but once per day, whether butter or cheese is made. In answer to another question he said he would not want milk carried but once per day to get too cold or there would be a loss of cream on the can. After cream is once stirred up you never could get it all to come to the surface again. In handling milk the point was to get it to its destination before much cream had arisen. He preferred warm milk brought to him than milk which had been brought a long distance. If he was going to make butter alone he would prefer warm milk, rather than milk which had been cooled enough to allow the cream to rise After the cream globules have once come to the top and are then agitated to any great extent, it is impossible to bring them again to their first condition. In reply to a number of scattering questions he stated that if milk was skimmed two and one-half pounds to the hundred, cheese could be made from it that would bring eight cents per pound, while if it was skimmed four pounds no market could be found for the cheese. He called two and one-half pounds partly skimmed and four pound skimmed. The more you skimmed the better quality of the butter made and vice versa.

R. P. McGlincy said that Streat, of Ohio, a prominent manufacturer, paid one cent per gallon more for milk delivered twice per day, during the warm months of July, August, September, and October, than for that delivered but once. He had found by long experience that it paid him to do it. Others in his neighborhood seeing how profitable it was were instituting the same plan.

Bartholemew thought that all factorymen could afford to pay that much more for a double delivery.

A deversion was here made by C. C. Buell, who asked Dr. Tefft what made the flavor in butter. The doctor stated that it had been found that the flavor of butter depended upon the acids formed, consequently if any of the lactic acid was destroyed in the process of manufacture, your butter was spoiled.

W. W. Bingham asked if this necessary acid was developed where the cream was taken from the milk while it was yet sweet.

DR. TEFFT replied that the acid would develop in the cream if it was left to sour.

The Topic (No. 1) was then resumed.

O. S. COHOON said that in his neighborhood a proposition was made by some of the farmers, to take their milk to the factory twice per day. They all tried the experiment, but before the end of the month they reverted to the old plan, all of them being satisfied that there was not enough extra profit to pay for the extra trouble.

C. H. LARKIN was called upon, and he stated that he knew nothing about the question further than having seen Hintze, of Elgin, try taking milk twice per day, and give it up in a short time. Mr. Hintze had told him that he gave it up simply because it required two sets of employes to take care of the two receipts, and he could not afford to pay two out of it.

The following paper on the same subject was presented to the convention.

ISAAC BOIES' PAPER.

Which is the More Profitable to the Dairymen, to Deliver Milk Once or to Deliver it Twice Per Day? The dairyman, if a good one, should never keep a poor milker, and should aim to take such care that the cow will yield a bountiful supply of good milk. When he has got the milk he should take good care of same; in hot weather, cool properly, in cold take care it don't chill. My own experience and tests go to prove that for butter alone or butter and cheese there is 20 to 25 per cent. in favor of delivering milk night and morning, the sooner milk is delivered after being properly cooled when cooling is needed, then set not to be disturbed until skimmed. In proof of my opinion I will state the result of 19 tests at Rock River factory the winter of 1879. No test less than 25 per cent. in favor of twice per day delivery. These tests were for butter alone. This winter at Genoa factory I made two tests for butter and cheese and found the loss was more than last season at least 35 per cent, allowing both articles to sell alike, which they won't do, the twice-a-day milk makes much the finest butter when delivered promptly after milking. Take 1,000 pounds milk to-night, carry it prompt to factory, set 36 hours if temperature is cool enough to stand that long, skim, work cream when ready into butter, work milk into cheese, then take 1,000 pounds milk and let it stand in cans over night, deliver next morning, set same as other, skim when ready, work same as the other into butter and cheese, sell at same price, and if your trial proves as my two, 10th and 13th this month, you will find 35 per cent. difference in favor of prompt delivery soon as drawn from cow. The milk of four cows if delivered to factory prompt twice per day will make more butter and cheese than five equally good cows, their milk being delivered once per day only. No test out of 21 in 1879 and 1880 has shown less than 25 per cent, in favor of twice-per-day milk. Of course dairymen cannot afford this.

Topic No. 4, "The Cost of Producing Winter Milk, Compared with the Cost of Producing Summer Milk," was then taken up.

W. W. Bingham: He had had no experience in comparing the cost of Winter and Summer milk. He knew that it depended not only upon the amount of feed given cows, but upon quality as well. He had made some estimates which he could give.

Where a cow averages 25 pounds of milk per day, the cost per hundred of the milk will be 60 cents; where the average is 30 pounds per day the cost will be 50 cents per hundred; where the average is 35 pounds per day the cost is 34 cents per hundred; where the average is 40 pounds of milk the cost will be 33 cents her hundred. This is on the basis of feed costing fifteen cents per day. Estimating feed at eighteen cents per day an average production of 30 pounds of milk per day would make a cost of 60 cents per hundred; 35 pounds per day 41 2-5 cents per hundred; 40 pounds per day. 39 3-5. As will be seen the more milk a cow averages, the less the milk costs per hundred.

On a basis of feed costing 20 cents per day an average of 25 pounds per day will bring the cost of milk 80 cents per hundred; 30 pounds of milk 66 2-3 cents per hundred; 35 pounds, 46 cents per hundred; 40 pounds 44 cents per hundred. He thought it made a little difference which was being made, butter or cheese.

R. M. PATRICK said he would state to begin with that he fed and watered his cows by rule. He directed his hands to feed a certain amount each day. In this way he had found exactly what his milk cost him. This Winter he estimated that his milk cost him 55 cents per hundred pounds. He had heard some of his neighbors say that they could produce Winter milk for 53 cents per hundred, but he had been unable to make it less than 55 cents. He raises his own feed. This Winter the flow of milk had not been so plentiful as last year, but he was well satisfied that milk could not be produced for less than 50 cents per hundred. When bran is $10 per ton and other feed corresponds in price it will cost from 50 to 55 cents per hundred to produce Winter milk. He feeds his cows 13 pounds of grain each day, alternating different kinds of grain.

KINGSLEY said he would differ from Patrick. He kept

60 cows and he thought he could make Winter milk cheaper than Summer milk. He feeds corn meal three times per day, with corn stalks at noon. To the cows giving milk he fed a six-quart pan of meal each time, and watered all once per day.

Hon. Lawrence had never kept an exact account of what his feed cost him. His dairy was half Short-horns. One-half of them come in in March, and the other half in October. He had adopted the plan of feeding his dry cows just as much meal in the Winter as he did those giving milk, and he found that it paid. He raises calves to supply his dairy. He divides his cows and thought it profitable. In feeding his cows he found that when hay was $6 per ton he could not afford to feed it, and changed to wheat straw. When he first tried wheat straw it was a great surprise to him to find that it increased the flow of milk. In less than 36 hours after he commenced it he noticed a change. Late years he took more pains to fill his barns with good clean wheat and oat straw when hay was scarce, and fed it with good results. In grain feeding he first gives his cows 4 quarts of bran and shorts mixed—say two parts bran and one part shorts; then he gives next time one quart of meal made from equal parts of corn and oats. In this way he keeps his animals always in good order.

R. M. PATRICK thought every farmer should know just what his feed cost him. There was a considerable difference between feeding dairy cows and feeding Short-horn stock as described by Mr. Lawrence. In the one case you fed for milk and in the other for beef. He reiterated that it was a fact that every man could and should know just what it cost him to produce his milk. Three years ago it cost 75 or 80 cents per hundred pounds to produce milk on account of expensive feed. None of the dairymen made any money, for it took all they received to pay for the feed. It is a fact that milk must bring $1.25 per one hundred pounds in the Winter to equal a Summer price of 75 or 80 cents. Some people think that you cannot feed too much but this is an error as any one who will look into it can see.

LAWRENCE: Was present when Dr. Miles opened his Silo pit at Champaign. The food was in a very fair condition. He had been reading articles in the newspapers since then, in relation to Silo, and believed that it made cheap feed.

COHOON: How much more will it cost to keep a cow that weighs 1,200 than one that weighs 800; and will a small cow give as much as a big one, other things being equal? He had cows that weighed from 1,200 to 1,400.

PATRICK: It is conceded by men who have looked into it that the cow that weighs 1,200 will eat less than the one which weighs 1,400; each cow needs a certain amount of feed to sustain life, and as the largest cow requires the most, she will be the most expensive. The experience of all the farmers who have paid any attention to the matter proves that the most profitable cow is the one that weighs from 1,000 to 1,200.

Adjourned to 7 p. m.

Evening session called to order at 7:30. On motion E. H. Seward W. W. Bingham, L. Woodward and A Thompson were appointed a finance committee. On motion of R. M. Patrick it was decided to ask the ladies to become honorary members of the Association.

W. W. Bingham moved that Mrs. J. M. Frink, Mrs. Sheldon and Mrs. F. G. Hackley be added to finance committee.

THE PAST AND FUTURE OF THE ELGIN BOARD OF TRADE.

BY R. P. MCGLINCY, SECRETARY.

Mr. President, Ladies and Gentlemen:—A year ago was accorded to me the honor of preparing a paper on "The Acts and Doings of the Elgin Board of Trade," in which I gave the figures in gross of all the transactions which had occurred since the organization of the Board in 1872, and of the transactions of the year 1879, in detail. Then I tried to give all of importance or of interest to the general public, so that in this article it will not be necessary to go into details of the past as elaborately as was done then; still a brief reference to the past history of the Board may not be out of place here, as so many of the members of the Association are, or ought to be, interested in the welfare of the Board of Trade, for, with many others, I feel that the Board should interest not only the producers of milk, and the manufacturers of butter and cheese, but every one who consumes an ounce of these products, for it was organized to benefit all of these classes, and so long as it is conducted for the benefit of these several classes they should manifest a lively interest in its transactions.

Away back in the history of dairying in Northern Illinois—so long ago that few of us remember the evils that befell the business, and which caused the pioneers of the industry great alarm, because of the unexampled wickedness of the men who were then engaged in the commission business in Chicago and other dependent cities,—the Elgin Board of Trade was organized, as a sort of mutual protection society—that is, where the manufacturers could find protection against the grasping commission men, and where the latter might obtain protection from the skimmers of the former. Those who had engaged in the dairy business in the Northwest, and especially about Elgin, did so for the money that was in it, and not for the fun of the thing, as some people supposed, and after having developed the industry, and demonstrated to the incredulous Easterners that good butter and cheese could be produced on the broad and fertile prairies of Illinois, as well as in New York state, they concluded that in order to make both ends meet—or both butter and cheese and money—something must be done to give them a good, reliable market and insure them prompt pay for their products, for previous to the organization of the Board, in 1872, the goods had been disposed of on commission, and by the time the freight, cartage, storage, shortage, and several other ages known to the trade, had been deducted from the shipments, the manufacturers found that the account of sales were very short, and occasionally they found themselves indebted to the commission man, and they had nothing to pay the milkmen or their help with, at least that is about the way some of them would state their grievances when they met in annual convention to talk over their future prospects, Well, as this kind of business would soon deplete a national bank—the fiatism had not been discovered—it was deemed wise and prudent to have a change of policy; and so, with high hopes of future wealth, on the part of some, and many misgivings on the part of the less sanguine as to the final result, the Elgin Board of Trade was organized on the 23d of March, 1872, and to it the hopeful turned their longing eyes like a storm-tossed mariner when he beholds the glimmering light of the friendly beacon.

It was the intention of the projectors of the Board to create a market at home for the sale of butter and cheese, and instead of the factorymen chasing around the country endeavoring to sell their products, the buyers were to come to them, or to Elgin, the acknowledged center of the circumference of the then known dairy world of the Northwest, for, be it remembered, but little dairying on a large scale was carried on in Wisconsin, and Iowa had not yet taken her first lesson in the A B C of the business. A home market was thus established, and although the first year of its existence did not give the Board of Trade a world-wide reputation, yet it gradually paved the way for this achievement, and to-day the Board of Trade of Elgin is as well-known among the dealers in the market centers of America and Europe as any Board in the United States, whether it be for the sale of dairy products, or grain and pork, or bonds, or other commodities, and the Elgin Board of Trade has become an important factor, for dealers everywhere look to its weekly meetings as an infallible guide for establishing the prices of butter and cheese. New York City, the great butter and cheese mart of the United States, and from which port nearly three-fourths of the butter and cheese of the United States is exported, waits with feverish excitement for news from Elgin giving the quotations, especially on butter, and particularly at this season, when a slight advance may disturb the market for a day or two; and other markets are also anxious to learn the quotations, and arrange for telegraphic reports from this recognized dairy center.

Frequently the sales of butter are made at a higher figure on the Elgin Board of Trade than on any other market, and this of itself proves the excellence of the product. For a few years past Elgin butter has been quoted in New York side by side with the fancy brands of Orange county, and to those who have watched these quotations there has almost invariable appeared the fact that the Elgin creamery brand was a little more desirable stock, and more ready of sale than the other brands.

The care taken in the manufacture and the determination to maintain the high standard attained has been the means of placing the Elgin product on the top shelf of the markets. This has been done in the past, and beside the individual effort in this direction, the Board has given no little aid to the matter, assisting its members, who were strangers, to make good sales, and by advice and encouragement endeavoring to stimulate all to manufacture the best quality of goods at all times. Many of the members, in the early history of the Board, gladly accepted the advice and profited by it, and they have carefully noted any improvement made by others, and were not long in following the examples set by their more skillful competitors in the business. There are to-day a few members who might learn something of their elders if they did not think that they knew it all themselves.

AGRICULTURAL EXPERIMENT STATION.
UNIVERSITY OF ILLINOIS.

The Board was organized on the 23d of March, 1872, and at one or two periods since then has passed through some very severe trials, which nearly cost it its existence, but happily wise counsels prevailed, these critical stages were passed, and to-day the Board stands in the very front rank of the dairy organizations of the land. It has a membership of over 200, scattered through Illinois. Wisconsin, Iowa, Missouri, New York, and probably one or two other states. These embrace dealers, manufacturers and dairymen, but of the latter there are only a few.

Since the Board was organized the total sales of butter and cheese to the present time amount to $6,087,695.81.

For the year 1880 the sales have amounted to over three-quarters of a million dollars more than they have been for any one year since the Board was organized.

The sales the first year, 1872, amounted to $81,000; in 1873, $219,177.53; in 1874, $368,258.58; in 1875, $496,220.04; in 1876, $767,640.68; in 1877, $1,059,085.08; in 1878, $775,597.15; in 1879, $539,143.67; in 1880, $1,801,303.09. A magnificent sum, truly.

In 1880 the number of boxes of cheese sold reached 233.940, aggregating 9,226,474 pounds; and the pounds of butter, 2,670,877. Allowing 500 boxes of cheese to a car, it would require 468 cars to transport the cheese to market; and 136 cars to put the butter into market.

The following table will show the sales by months as they were reported on the Board:

Months.	Boxes Cheese Sold.	Pounds.	Average Price.	Pounds Butter Sold.	Average Price.	Total Sale.
January	19,762	786,286	11 3-4	169,717	33 3-4	$139,750.01
February	11,612	421,784	12	191,010	37	120,049.32
March	20,155	717,661	10 4-5	255,072	32 4-5	174,805.62
April	20,557	785,279	10 1-2	199,152	24 1-2	138,104.24
May............	16,259	604,058	9 1-2	216,576	21 1-8	103,508.76
June............	23,936	996,385	7 3-5	243,276	19 1-5	128,245.72
July	23,425	1,144,966	7 1-2	207,831	23 1-4	120,044.28
August........	23.351	956,563	10 1-4	243,283	25 3-5	164.660.06
September ...	18,528	777,880	11 1-2	180,550	29 1-4	141,684.73
October	20,776	801,717	11	245,918	29 1-4	167,831.12
November ...	23,393	862,537	8 1-2	343,956	33 1-4	190,024.72
December ...	31,187	1,088,153	8	359,691	34 1-2	212,014.51
Total.	233,940	9,226,474	....	2,670,877	....	$1,801,303.09

The highest price attained for cheese was Jan. 20, when it sold for 13 cents, and again on Feb. 3 it sold for the same. The lowest price was in July, when it sold at 5 cents. The highest price for butter was 38 cents, Feb. 24; lowest price 18 cents, June 8.

The past history of the Board is an excellent one, and the members, those old stand-bys, in particular, are to be congratulated and deserve praise for the showing. President Tefft, who has occupied the position since the first meeting in 1872, is entitled to, and receives no small share of the praise for the interest he manifests in everything pertaining to the Board. Always alive to the needs of the organization, he seems to be the right man in the right place, and the Board of Trade, without him to preside, would be like the play of Hamlet with Hamlet left out. He is ever ready to advise with all in any matter on which they may consult him, and his advice is eagerly sought by the members. May he long be spared to preside at our meetings.

The future of the Board is not so readily portrayed as the past, at least by the secretary. Man has a longing desire to raise the veil of futurity and peer into the beyond, but an All-wise Providence carefully guards the future as a miser does his wealth, and we can only speculate as to what the future has in store for us. But judging the future by the past, the Board must continue to benefit its members and all dairymen who live within a reasonable distance of it. The past year it has aided in increasing the price of milk, whether shipped to Chicago or sold at the condensing factory. It has given factorymen a market at home. enabled them to become better acquainted with dealers in all parts of the country, and enabled them in establishing a world-wide reputation for the production of the best butter made anywhere.

The future of the Board must depend largely upon the individual action of its members. Their cheerful compliance with all just and reasonable rules will be necessary; factorymen should promptly report their sales, so that the extent of the business may be arrived at, for there can be no question that the publishing of reports weekly of the sales on the Board has been a benefit to members;

the sellers should adhere to the almost universal rule adopted during the past year, and sell, instead of commissioning their goods. In the future more dairymen should be members of the Board. It has benefited them, and they should help sustain it. After becoming members, they should at least oceasionally attend the meetings.

The future of the Board requires that each member should set his seal of condemnation on all attempts to manufacture or sell any adulterated butter or cheese, and unless this is done and the fact advertised, the future of the Board may be considered an unsolved problem. But with the experience of the past season, no apprehensions may be felt concerning the future use of anti-huff, which, at least in this section, has outlived its usefulness. Suine, which at best is a very questionable compound, has never been countenanced by the Board, though individual members may have made and sold it. Lard cheese should be tabooed; in fact, all adulteration should be disowned and discouraged by the Board and its individual members, and every possible effort should be put forth to manufacture the highest possible standard of goods. Let the aim be excellence of quality rather than quantity.

"OLEOMARGARINE."

From paper on "Adulterations," read before the Boston Board of Trade, Nov. 11th, 1880, by Geo. T. Angell, president Massachusetts Society for the Prevention of Cruely to Animals, vice president American Humane Association, and director of American Social Science Association:

I have spoken of Glucose as a giant which has grown in a few years to colossal proportions.

I will now speak of what I may properly call its twin brother, oleomargarine.

Few persons have any correct idea of the extent to which this article is now made in this country.

A single firm in New York City has recently contracted with parties in Vermont for 300,000 firkins to be delivered this year for packing oleomargarine butter.

It is estimated that there was made in this country last year about a hundred millions of pounds.

It is sold, as I am informed, in almost every butter stall in our great Fanneul Hall market, and large quantities of it are, as I am informed, shipped to Vermont to come back as Vermont butter.

It is put up in beauiful forms as well as in tubs and firkins and cannot ordinarily be distinguished from the products of the milk from the cow,

It is not only filling our markets in the shape of butter but also cheese. Many creameries, and many large dairies, as I am informed, are now mixing twenty-five per cent. or more of oleomargarine oil with their cheese.

Are these commodities unwholesome?

Manufacturers will tell you they are even better than the products of the cow, and they will show you a long list of certificates from their paid chemists to the same effect.

I have microscopic photographs which tell a different story, and the testimony of scientific men whom I believe.

The French Academy of Medicine have, as I am informed, recently reported that French oleomargarine is unfit for use in French hospitals.

The ground taken was, as I am informed, that while it might be possible to make in a chemist's laboratory a pure article which would not be unwholesome, in point of fact it was found by the Academy experts in Paris that only an inferior article was actually sold in commerce, which appeared to injure the digestive organs of sick and debilitated persons.

Mr. Michel, of New York City, a well-known microscopist, and editor of a scientific journal, teslifies that oleomargarfne is simply uncooked raw fat never subjected to sufficient heat to kill the parasites which are liable to be in it, and that those who eat it run the risk of trichinæ from the stomachs of animals which are chopped up with the fat in making it.

He states that he has found in it tissue and muscle, and cells of suspicious nature, and that Mr. Taylor has also found in it positively identified germs of disease. Mr. Michels further states that all the caul fat of oxen brought to New York City in a week would not supply one factory four days, yet there were seven factories in N. Y. City, and he asserts that there can be no doubt that fats and grease of various kinds are used in making oleomargarine.

The eminent English chemist Prof. Church states that he has found in it horse fat, fat from bones, and fats such as are ordinarily used for making candles. But the gentleman who probably more than any one else has written upon this subject is Dr. R. U. Piper, of Chicago, concerning whom the chief justice of the superior court of that city, and three other judges, certify that the testimony of no other scientific gentleman of that city would, in their judgment, be entitled to higher respect.

Dr. Piper says his attention was first called to the subject by an article published by Mr. Michels before referred to, in the American *Journal of Microscopy*. Since then he has examined a large number of specimens.

He says that "while no true butter can carry trichinæ, eggs of the tape-worm, etc., he has found in oleomargarine not only organic substances in the form of muscular and connective tissue, and various fungi, but also living organisms which have resisted boiling acetic acid, and eggs resembling those of the tape-worm."

These he has preserved to be shown to any who desire to see them, and he has also microscopic photographs of them.

He thinks these may get in through the stomachs of pigs and sheep used in making the article though he has found in it specimens of uncooked meat.

His conclusion is that it is a dangerous article and that he would on no account allow its use in his family.

The Rev. E. Huber, miscroscopist of Richmond, Va., writes in the *Southern Clinic*, of May, 1880, that oleomargarine differs in its microscopical appearance as well as in its nutritive and dietetic qualities from true butter, that the fats in it are not subjected to a heat sufficient to destroy the germs of septic and putrefactive organisms, and that there may also be introduced into the system by its means the eggs which develop in tape-worm.

And he also states that he has frequently found in oleomargarine eggs resembling those of the tape-worm.

Mr. Michels says I have reason to believe that the refuse fat of at least one pork packing establishment is used for oleomargarine, and as the trade increases fat of every description will probably be offered for sale, even that from the carcasses of diseased animals.

Prof Piper says that " it is not unreasonable to suppose that one of these populated stomachs chopped up with the fat, even though washed and cleaned, may contain thousands of living organisms."

In view of the great and increasing magnitude of this business; and the report of the French Academy of Medicine; and the discoveries of the scientific gentlemen before named; and the danger of using the raw fats and stomach's of diseased animals, and of those that die on the cars, which number hundreds of thousands annually; and of those that die of pleuropneumonia, or cattle fever, or hog colera. I think we have no reason to rejoice over the erection of these enormous factories which are now supplying the tables of our hotels, restaurants, boarding-houses and private families with oleomargarine butter and cheese.

One thing cannot be denied by the great capitalists engaged in this manufacture, viz: That not three men or women in a hundred would eat an ounce of these articles if they could know by color, or otherwise, what they were eating.

No man would want to give his wife or children, for butter the raw, uncooked fats of mixed animals that have died of disease, and how manufacturers can in all cases guard the public against such fats is a problem beyond my comprehension.

One of the largest oleomargarine dealers in N. Y. City has recently offered, as I am told, through the National Board of Trade, a thousand dollars for the three best essays on adulteration.

Possibly those essays may explain to the public how they can safely eat oleomargarine.

"MILKMAIDS."

BY MRS. FRANK CROSBY, OF ELGIN.

Ik Marvel in his "Wet Days at Edgewood" spends the humid hours in his library. He pores over the vellum of antiquity, and finds that the Greeks and Romans knew quite as much about farming as authorities ranked competent in these days and he cites passage after passage which reflects admirably their common sense in the management of everything pertaining to farm life. He follows this bucolic vein down through the older French and English poets 'till, among the charming metamorphoses which his reading effects, he tells us.

"Through the prism of their verse, Patrick, the cattle-tender changes to a lithe milkmaid, against whose ankles the buttercups nod rejoicingly and wakes all Arden with a rich burst of laughter."

This is the milkmaid of tradition, picturesque, songful and laughter-loving, whose praise coming down the centuries has reached us through the notes "oaten stop or pastoral song."

She it is, whose meridian glory was, doubtless, in the seventeenth century, the day of castes, processions and pageants, whose customs and costumes we ape now on the stage, in tableaux, the carnival or the fancy ball.

She it is, whom Milton, of that period, mentioned in his "L'Allegro" in this connection.

"While the plowman near at hand,
Whistles over the furrowed land,

And the milkmaid singeth blithe,
And the mower whets his scythe."

She it is, whose voice was lost in the silence of Goldsmith's "Deserted Village," where in its prosperity, among many sweet sounds "at evening's close" one might have heard,

"The swain responsive as the milkmaid sung."

She is one the birds at their matins missed after the cruel "Sack of Baltimore."

"Midsummer morn, in woodland nigh, the birds begin to sing;
They see not now the milking maids, deserted is the Spring."

Lines like the following portray her image:

"I see the pool, more clear by half
Than pools where other waters laugh
Up at the breasts of coot and rail.
There, as she passed it on her way,
I saw reflected yesterday
A maiden with a milk-pail.

"There, neither slowly nor in haste,—
One hand upon her slender waist,
The other lifted to her pail,—
She, rosy in the morning light,
Among the water-daisies white,
Like some fair sloop appeared to sail."

"Against her ankles as she trod
The lucky buttercups did nod."

Or these:

"I met a maiden with shining locks,
Where milky kine were lowing."

"She wore a kerchief on her neck,
Her bare arm showed its dimple,
Her apron spread without a speck,
Her air was frank and simple."

"She milked into a wooden pail
And sang a country dity."

* * * * * * *

"And all the while she milked and milked
The grave cow heavy laden,
I've seen grand ladies plumed and silked,
But not a sweeter maiden."

But not a sweeter, fresher maid,
Than this in homely cotton,

Those pleasant face, and silky braid
I have not yet forgotten."

What are the songs she sings? Here are bits from one by Sidney Dobell, which represents the course of her thought while the streams of milk beat time till the pail is brimming.

"Fill, fill,
Fill pail, fill,
For there by the stile stands Harry!
The world may go round,
The world may stand still,
But I can milk and marry,
Fill pail,
I can milk and marry."

"Give down, give down,
My crumpled brown!
And send me to my Harry.
The folks o' towns
May have silken gowns,
But I can milk and marry.
Fill pail,
I can milk and marry."

Rarely is anything crystalized in verse sweeter than this which the old mother recalled as the last song of her "sonne's faire wife Elizabeth," which she heard echoed back from the shores of Lindis, as she sat spinning within her door:

"Cusha! Cusha! Cusha!" Calling,
"For the dews will soon be falling.
Leave your meadow grasses mellow,
Mellow, Mellow.
Quit your cowslips, cowslips yellow!
Come uppe Whitefoot! Come uppe Lightfoot!
Quit the stalks of parley hollow,
Hollow, Hollow.
Come up Jetty, rise and follow;
From the clovers lift your head!
Come uppe Whitefoot? Come uppe Lightfoot!
Come up Jetty! rise and follow,
Zetty to the milking shed."

In adjusting ourselves to changed conditions much is modified, and much is lost which has not a pecuniary value.

Since the steam era began, the romance of dairy-farming as well as of travel has been taken away.

In old England fast outgrowing her old-time sports and customs the milkmaid has been one of the last to yield her place.

"A few years ago, in London, the only trace of the old custom of going a-Maying were the garlands of the milkmaids and the Jack-in-the-green of the sweeps. The garland (so called) was made of silver plate, borrowed for the day and fastened upon a sort of pyramid.

Accompanying this droll garland were the maids themselves in gay dress, with ribbons and flowers; and attended by musicians who played for them to dance in the streets.

Sometimes a cow was dressed in festive array, with bouquets and ribbons on her horns, neck and tail and over her back a net stuck full of flowers. Thus highly ornamented the meek creature was led through the streets.

A sad coming down, indeed, from the time when the milkmaid assisted at the festivities around the May-pole in her native village, when lords and ladies, as well as king and queen laid aside their state to rear its leafy crown!

From what has been cited we may see that we can predicate of the representative milkmaid very enviable qualities.

She was frank, simple, comely, rosy-hued with health, graceful, tidy, contented, sweet-tempered and lively, industrious, honest, persevering, devoted to business, proud of her calling, tenacious of purpose, duly ambitious, all of which she could hardly have been, had she been avaricious.

She has never been naturalized on American soil any more than have the skylark and the nightingale, nor is she the exact prototype of the dairy-women—the farmer's wife and daughters and the "hired help," (barring the foreign element) that till more recent times, sustained the credit of the dairy interest in this country.

Our dairy woman added a large intelligence to the good traits enumerated and was more likely to be heard singing religious or patriot songs daily, for her training led her to believe she owed an abiding loyalty to God and her country.

In "Webster's Spelling Book," the most important text-book of the fathers and grandfathers of the American people, there was a funny old picture of "The Country Milkmaid and Her Milk Pail," which once seen could not be forgotten, and it would seem that these worthies did not drink in the truth of its moral. Oddly enough it came between the picture and the story. It ran thus:

"When men suffer their imagination to amuse them with the distant and uncertain improvements of their condition they frequently sustain real losses by their inattention to those affairs in which they are immediately concerned."

After looking at the picture they probably skipped the moral to get to the story and thought it meant that women should not think so much of fine things and of going to town, and should not "count their chickens before they were hatched."

Perhaps the author began "When men, etc.," and put the moral first, (such a very unusual thing), in order that they might not fail to see that it applied particularly to them, but that they did not learn it or teach it to their sons and grandsons recent events would warrant us in believing.

It is quite evident that this milkmaid lived when there were strong premonitions of a breaking up in society, even in country society.

She had not unalloyed satisfaction with her condition in life as her English cousins seemed to have. She for a moment succumbed to an alleged weakness of her sex and allowed her mind to wander from her legitimate occupation to the whimsicalities of dress and its attendant temptations. She had even decided on the color of her prospective gown. She knew well enough that the other sex believe "fine feathers make fine birds," and that thereby they would be attracted and she felt all the joy that comes of independence, and imagined how she would express proper scorn and discard their attentions. How admirable it would have been considered, had she succeeded! But she felt her triumph too early. The record left her transfixed on that page, paralized by that one audacious toss of the head.

It never seems to have occurred to anyone that she could or did "cry over spilled milk," and probably she did not, for people with such forsight as she manifested are not the ones to sit down and whine. It is more reasonable to suppose she picked up the pail, vowing mentally that she would give the lads and all thoughts of them the go-by for one while, and walked to the dairy-house a wiser if not a sadder woman. Very likely she sang somewhat louder than usual, and to one passing might have been only,

> "The clattering dairy-maid immersed in steam,
> Singing and scrubbing midst her milk and cream."

If she was the "hired girl" of a century ago, more or less. there is reason to think that she properly and honestly accounted to her employer for the deficiency in that day's quota of milk, and though it was deducted from her wages, she was too good a girl to be dismissed lightly, and knowing "which side her bread was buttered on" she did not walk off in a huff, but set to work to excel in her department of service.

She did all this and more. When the men desired to "deacon" the calves, and "wouldn't be bothered with them anyhow," she raised them by hand. She was particular about the stripping every time, and gave unexpected treats and cosset greetings to the cows, so that they favored her at milking time, and somehow she secured richer milk and more of it, more cream, and yellower butter, than they did at other farms. The butter she made was more than "gilt-edged," it was golden.

When it came to make cheese, she put just enough rennet in the milk, had delicious curds, turned the cheeses carefully in due time, knew the difference between a "full cream" and a "white oak" cheese, now and then made a "sage cheeee" and became wise in all the cheese-paring economy of those days. Her cheese had a bouquet of its own, which could not be approximated by any attempt of imitators, and was known and sought, from far and wide.

The farmer in whose employ she remained year after year, drew out his wallet weighed down with those shining coins, irreverently called the "dollars of our daddies," so many of which her thrift had gathered there, told with satisfaction how much he was going to be able to lay up that year, and under the eaves of the sanctuary, or out by the horse-sheds, while he munched his doughnuts of a Sunday noon, imparted confidentially his conjecture as to how much his dairy would bring him in. She, good, patient worker found comfort in the reputation she had won as the best butter and cheese maker in the country Now and then she turned an honest penny by being allowed a little of the poultry money for some extra attention to them, or by investing in some prolific ewe, whose twin progeny gave her, unexpectedly, large and fine fleeces, and savings of this sort were added to the original pile.

It is to be hoped that she met her fate and the fulfillment of her youthful imaginings, by being chosen by some good and great governor of the commonwealth for a life-partner, and that she left her somewhat menial but worthily distinguished position to shine as did Lady Wentworth, whose memory merited embalming in a poem by Longfellow.

It is more in accordance with the tenor of lives and events of that period, however, to suppose that when her employer's wife succumbed to the rigors of a New England climate and the overwork necessary to tne spinning and weaving, making and patching of garments for a house full of boys, and passed out of time by a sort of home consumption, the *major domo* took consolation in surveying his acres, bethought himself of the handsome sums he had so long been putting into the hired girl's purse, and his grief was turned into a new channel by estimating just how much she ought to have by this time, and he concluded it would be best to absorb them naturally and legally by marriage.

Whether this catastrophy occurred, or not, whether she rode in her coach, or even arrived at the dignity of a "one-hoss shay" it behoves us not to inquire.

It is not so much of the matron, as the maid that we are thinking, and why may she not be the very one of whom Trowbridge wrote,

"Now to her task the milkmaid goes,
The cattle come crowding through the gate,
Lowing, pushing, little and great;
About the trough, by the farm-yard pump,

The frolicsome yearlings frisk and jump,
While the pleasant dews are falling;—
 The new milk heifer is quick and shy,
 But the old cow waits with tranquil eye,
And the white stream into the bright pail flows
When to her task the milkmaid goes,
Soothingly calling,
 'So, boss! So, boss! So! So! So.'
The cheerful milkmaid takes her stool
And sits and milks in the twilight cool,
 Saying 'So! So, boss so! So! So!'"

Later:

"The household sinks to deep repose,
But still in sleep the farm-boy goes,
 Singing, calling,—
'Co' boss! Co' boss! Co'! Co'! Co'!'
 And oft the milkmaid in her dreams,
 Drums in the pail with the flashing streams,
Murmering 'So, boss! So!'"

"Mute is the voice of the rural laborer, hushed the plough-boy's whistle and the milkmaid's song," for the occupant of the sulky plough never stops impelled to mourn the fate of a "wee modest crimson-tipped flower," to catch the wild melody that fills the woods adjoining the field, or to whistle as if his heart were too full of music to contain itself. Instead of the mower whetting his scythe, or the company of mowers swinging their scythes to the music of the falling swaths, perchance breaking the ranks out of sympathy with the piteous plaints of bereft mother-birds, or scattered by the furious buzz of molested bumble-bees, the driver of sleek horses moves monotonously and with mathematical precision around "meadows trim with daisies pied" to the discordant click and rattle of restless rasping blades, but too rapidly to note with ear or eye the fall in death of majestic grasses or of tearful and crowned beauties.

Instead of the milkmaid's song, is heard the whoop of the big, bearded Hibernian, with a burr on his tongue, an oath hot on his lips, and no suggestion whatever of "incense breathing morn" or the sweet breath of kine, but rather the all-permeating perfume of the ancient but indispensable Dudheen.

Little wonder that some one thus voiced the incredulity of many with regard to the beauties of country life.

"They may talk of love in a cottage,
  And bowers of trellised vine,
Of nature bewitchingly simple,
  And milkmaids half divine."

"Your love in a cottage is hungry,
  Your vine is a nest of flies,
Your milkmaid shocks the Graces,
  And simplicity talks of pies."

The country becomes more and more a place of dearly-cheap summer resorts or market gardens worked by foreigners, from which those "to the manor born" rush to plunge into the seething mass of humanity in cities. The cities themselves seem most like a writhing mound of serpents, whence forked tongues are thrust to hiss and hiss, and glittering eyes peer to fascinate till closer and closer the victim is drawn in the folds of the charmer.

The city tries to prove that it can exist without the country by selling chalk and alum for bread and for milk chalk, burnt sugar and water diluted with milk drawn from a slop-fed, sickly, terrified herd that has forgotten if ever it knew of green pastures.

"We have changed all that," as the French say, and let a Frenchman, one capable of making soup from cast-off kid gloves, claim and have the credit of discovering the way to make butter out of suet—oleomargare—which opened the way for butterine, suine, and the namelessly nasty, much-manipulated, deodorized and delectably *awful* combinations which are literally and indeed *offal.*

If woman has turned from rural avocations and domestic life to try her fortune, as physician or lecturer, man has been allured from the platform to a coverted place next to the man-milliner and the man-dressmaker. This scientific man-milkmaid has not yet perfected a milking machine, but he bids fair to go down to posterity as famous as the alchemist over his crucible seeking the philosopher's stone. All hail the man-milkmaid over his vats transmitting lard into butter!

Sometimes a huge joke is perpetrated in spite of everybody and anybody. Such was that of the monster cheese at the Paris exposition in 1867.

The swiss determined to send hither a wonderful specimen of Schweitzer-Kase.

"So rosy milkmaids,
In caps and long braids,
Milked the bonniest cows in the fields."

By no mischance was the plan defeated. A mammoth cheeese was pressed, and turned, and cured, and with the pomp of a royal progress it was ushered into Paris and throned at the Exposition. Of course it took the prize, and the worthy burghers, wishing to recognize thc compliment, voted to make the cheese a gift to the poor of Paris, and to show proper gratitude for such munificence four commissioners are appointed to thank the Swiss in behalf of the poor, which they do with speech and toast and appropriate ceremonies. Eight Normandy horses wait and the porters are ready to push their utmost in order to get His Majesty forward a little space, when, "One! Two! Three! Ready!" and down they all go sprawling, for the Royal Cheese has ignominiously collapsed. The rats, the underground poor of Paris, have taken their share first having stealthily entered from below through a hole in the platform.

"Now nothing but just,
A crushed-in crust,
A cart-load of scraps and a pungent dust."

Remains of the great Gruyere, to the vast chagrin of the Swiss and the officials who stood around sneezing and astonished, and to the vast merriment of all the world besides.

Sometimes, again, it happens that a joke is perpetrated by somebody in spite of somebodies, and at the expense of both.

To illustrate: Once upon a time when the world grew hungrier and hungrier for the dainties of the dairy, which lingered in many a man's memory as "such butter and cheese as mother used to make down at the old farm," the Great Northwest rose up and casting a glance at its ample grazing lands, and impressing the man-milkmaid into its service, said, "Go to, now, let us give this great world, hungry and always crying for more, a taste of cheese, such as mother and the milkmaids of the past never had a hand in."

With his science and steam apparatus, up stepped the brave man-milkmaid, to whom a pig in the pen might be bonnier than any cow in the field, and who by accident of birth was expected to know more about making butter and cheese than the buxom milkmaid of by-gone days, notwithstanding all her inherited skill and years of practical experience, and he said, "Presto! it shall be done." Then the cheeses, fairly good cheeses began to roll out of the factories, "like shot off a shovel," and the hungry world said "At least there will now be enough."

The Great Northwest took pride in the butter and cheese it was furnishing and built up in its great enclosure a towering reputation. at which the little cheeses, Holland, Rachefort, Parmesan, Neuf Chatel, Limburger, Stilton, Cheshire, Cheddar, Western Reserve, New York cheese and queer nameless cheeses fell down as if at worship, and all the nations stared at the wonder. The great ships were waiting to carry off the immense cargoes of butter and cheese to the hungry world, when all at once the hungry world pressed its hand to its heart, or near it, and shrieking with pain, gasped out that it had had enough. The Great Northwest gathered its officials and together they walked about the tower, talking and getting ready to inspect matters and to investigate and ventilate things most thoroughly, when suddenly the tower topled and they were anxious to get from under.

They expected to be incomprisingly crushed, but it vanished in a puff, for the material with which it had been built, firmer than oak staves, and supposed to be "as solid as old cheese" had been nearly eaten through by "anti-huff" which had been surreptitiously infused into the cheese. The Great Northwest and its officials would have been glad if the rats had feasted on it, as they did on the King Cheese at the Paris Exposition, for it might have been death to myraids of them, instead of ruin to their magnificent pet enterprise. While "they mused the fire burned" the butter meanwhile having become frightened ran off like a centipede to look at itself as revealed in the microscope. The

Great Northwest and its officials now stood aghast and called its multitudinous man-milkmaid to account, decreeing that something must be branded with large letters F-R-A-U-D and what more would come of it no one could tell but the nations sat around grinning like so many Chessie cats and the hungry world opened its mouth the wider and bawled the louder.

Was this the picture in Apocalypse that sealed the eyelids of the "dreaming Iolanthe," done in butter at the Centennial; perhaps, but there are those who will not accept the vision. Over different lands are scattered those who sigh for a freehold, the joy of a homestead and one look more at

> "The cot of my father, the dairy-house nigh it,
> And e'en the rude bucket which hung in the well"—

They long to see again

> "Landscapes green and cool,
> Sleek cattle standing in shadow and pool."

The spring, the spring-house, "pails brightly scoured and delicately sweet," and even that "friendly tripod," the milking stool.

To them it would be music, again to hear "the pasture bars that clattered as they fell," and the heavy plaint of the old-fashioned churn, "Cachug! Cachug!" groaning under its heavy burden of cream.

These dream of such surroundings as would make possible once more the

> "Bowl of cream uncrudded,"
> Such "festal dainties spread
> Like my bowl of milk and bread,"

Or a picture like this reproduced in fact;

> "She brought us in a beechen bowl,
> Sweet milk that smacked of mountain thyme,
> Oat cake and such a yellow roll
> Of butter—it gilds all my rhyme."

They hold the milkmaid of yore in fragrant memory and utter in benediction,

"Fair shine the blue that o'er her spreads,
Green be the pastures where she treads,
The maiden with a milking-pail."

Topic No. 6 was then taken up, "What Legislation, if Any, is Necessary to Prevent the Adulteration of Articles of Food?"

R. P. McGLINCY'S ADDRESS.

Mr. President, Ladies and Gentlemen :—Relying upon the gentlemen who have been assigned to this topic I have made no preparation for it, and must therefore rely upon making an extemporaneous speech if I make any. The question assumes that food articles are adulterated, and that these adulterations can be prevented by legislative enactments, but the great trouble is to enforce the laws we have upon our statute books. That nearly all articles of food are adulterated is not questioned, and that some, if not all, of these adulterations are harmful is not denied by the best informed physicians of the land. People will and do adulterate food for the sake of gain, regardless of what the results on human life may be, and some measures, the surer the better, if the law be enforced should be provided, whereby life may not be jeopardized by what we eat. Really sir, it is mighty dangerous to live in these days of anti-huff and lard in cheese; with the rotten fats from which oleomargarine is made; *sowine*, which is mixed in butter; terra alba in sugar; talc in flour, and so on to the end of the list of all the articles of food which we daily consume. A day or two ago ago I picked up a Chicago paper, in which I found an excellent article on "Our Food and Drink," by Dr. O. W. Wight, of Milwaukee, from which, with the permission of the Association I will read a few extracts:

Dangerous Adulterations:—Lead in canned vegetables and meat; corrosive sublimate in the rind of cheese (used to destroy "skippers"); poisonous colors (such as arsenite of copper and chromate of lead) in candy and confectionery or caustic lime in lard; analine color in fruit jellies, preserves, sausage and wine; salts of tin in sugar; cocculus indicus and tobacco in beer and ale; salts of copper in pickles; and food and drink in this country which are even dangerous to life. Their use should be prohibited under severe penalties.

Deleterious Adulterations:—All of the adulterations mentioned above, even when in too small quantities to be dangerous, are also deleterious or injurious to health. Alum in bread and in baking powder; copper in butter; artificial essences in candy and confectionery; oxide of iron in cocoa and chocolate; alum in flour; red lead in cayenne pepper; spirits of turpentine in gin; chromate of lead in mustard; water in milk (depriving infants of nutrition); crude brandy and "platridge" in wine; red ferruginous earths in annatto; red lead in currie powder; sulphuric acid in glucose sirups; lead in cider; Prussian blue, black lead, and salts of copper in tea; sulphuric acid alum, aloes, and picric acid in beer; and some other deleterious adulterations of the food and drink of man, are met with in this country more or less frequently. It is an impossibility to measure the amount of injury thereby caused to the public health. Doubtless some of them turn the scales of life and death against delicate infants and invalids, which fact might be a sufficient reason for transferring them to the list of dangerous.

Fraudulent Adulterations:—The object of dangerous and deleterious adulterations is gain, and they may therefore be reckoned among the fraudulent. Sago, tapioca, potato, and other feculia in arrowroot; soap, sulphate of lime, and all sorts of starch in annatto; mustard husks in allspice; water, burnt sugar, etc., in brandy; potatoes, inferior flour, etc., in bread; lard, tallow, water, starch, and oleomargarine in butter; vermillion, venetian red, ground rice, and tumeric in cayenne; excess of water in canned vegetables and meats; annatto, other coloring matters, oleomargarine, and "vacuity of cream," in cheese; glucose in candy and confectionery; corn, starch, sago, tapioca, animal matter, and cheaper kinds of arrowroot in cocoa and chocolate; chicory, burnt sugar, and roasted peas in coffee, ground rice in currie powder; salt and sugar in gelatine; tumeric, cayenne, and mustard in ground ginger; flour; glucose, and cane sugar in honey; gelatine in isinglass; starch, stearine, salt, and potato in lard; flour, turmeric, cayenne, and yellow lakes in mustard; turnip in horseradish; apples, pumpkins, and molasses in preserves; linseed meal, different flours, ship-bread, and mustard husks in pepper; potato starch in sago; water, cayenne, burnt sugar, etc., in rum, rice flour, sand, and glucose in sugar; molasses, cochineal, armenian bowl, and other coloring matters in various sauces; flour and starch in spices; sand, magnetic oxide of iron, spent leaves, and foreign leaves in tea; arrowfoot and clove stalks in cloves; ship bread in pimento; spent bark in cinnamon; water and burnt sugar in vinegar; molasses, water, and salt in porter and stout; glycerine in beer; and things innumerable in liquors and wines, are adulterations that touch the economy of every household, if they do not bring a visitation of the doctor, and involve the services of an undertaker.

THE EFFECT OF THESE ADULTERATIONS ON HEALTH AND TRADE.

On Health:—From dangerous adulteration a few die. Deleterious adulterations cause or intensify the ill-health of many. It is not necessary to translate in popular language long chapters from the National Pharmacopæia, from a treatise on materia medica and therapeutics, from a standard work on toxicology, or from an authorative system of medicine, in a vain attempt to estimate, even approximately, the number of deaths and the amount of sickness caused by adulterations of food and drink. The articles used in adulteration are known, and the effects of such articles when taken into the human body are known. Other essential factors, quantity employed, percentage of admixture, chemical modifications by culinary processes, habits of individual, etc., are unknown, and conclutive generalizations become impossible. Speculation in the midst of such chaos tends, on the one hand, to sensational exaggeration, and on the other hand, to be little a real public danger. Here, as elsewhere, the true scientist awaits facts, and avoids alike the creation of a public panic or the infusion of a false sense of public security.

On Trade:—It is not necessary that mankind should eat and drink things dangerous to life and injurious to health that trade may flourish. In fact, trade flourishes best under a policy of honesty. Tradesmen and the community are mutually responsible for the evils of adulteration. The people generally ask for cheap and attractive goods. The supply adapts itself with measureless cunning to the demand. One more unscrupulous than the rest attracts customers by colors that do not reveal to ignorance the poisons lurking within. Others must follow his example or retire from the field. A daring dealer imitates the flavor of a genuine article by a cheaper mixture, and his neighbors must follow suit although they may know that they are scattering the seeds of sickness among the unconscious. The greater part of mankind find the struggle to obtain the necessaries of life so hard that any apparent opportunity to economize is eagerly seized. Purveyers of food and drink compete with each other, not only by reduction of profit, but by cheapening quality. He who reduces quality most in reality and least in appearance can win in the great battle of the "survival of the fittest." Human ingenuity is taxed to the utmost; the whole earth is explored to obtain and put to use the means of success. Men have come to look upon frandulent adulteration as commendable enterprise. Injurious adulteration is winked at by most. Necessity of trade is pleaded as an excuse for dangerous adulteration, even when its prevalence is deplored. The mutual concealments and deceptions of producers and consumers tend to educate the public in dishonest ways. The heart of man is hardened towards his neighbor whom he cheats, and the conscience is deadened when gain is secured at the expense of another's health or life. As the world's commerce would not be diminished by cessation of adulteration, it is very evident that the net residue of the practice is to corrupt and deprave trade, without increasing its profits. Much the greater portion of the manufacturers and merchants of food and drink would prefer to make and handle genuine goods, if they were not driven to an opposite course by the unscrupulousness of a few. When people learn that a dollar's worth of a pure article is more valuable than three-fourths of the same quantity when mixed with ever so much useless, injurious, or dangerous foreign material, when dishonest producers are restrained by the strong hand of well administered and just law, then we may expect to see trade become the minister of something better than material civilization, Reputation for integrity is even now of equal value with capital in trade. And the nation that first establishes a character for honest goods will reap a rich harvest of profit in the world's commerce.

After such testimony it appears to me that no one will deny that something should be done by our state and general government to protect the lives of our people trom the sharks who are bent on murdering us by piece-meal with what ought to be palatable food. Our own state, as I find by the statute, has given us a wholesome law in regard to the adulteration of butter and cheese, but we need some way of enforcing it, and we need a more sweeping law in relation to all food adulteration, with a provision that will send every man convicted of this nefarious business to state's prison for life.

FRANK CROSBY'S SPEECH.

Mr. Crosby, of Elgin, was called and spoke as follows:

Legislation, if by that was meant the enactment of new laws, was unnecessary in this matter of food adulteration for the reason that we had not tried the laws already upon our statute book. A law for such a purpose was, in his judgment, not worth the paper it was printed upon unless, it was backed by public opinion. The statutes already upon the books were good enough, he did not see how they could be better worded. If these laws are enforced then we have enough; if they are not enforced we would better not ask for more. Unless you get public sentiment back of your existing laws, it is absurd to talk of further legislation.

You may just as well make up your mind first as last, that you can't legislate honesty into butter and cheese makers nor wisdom into consumers of these articles.

There was a time when we could get, in this country, good orthodox cheese, but now you could not get such cheese for love nor money. Once in a while he went into a grocery store and found cheese that he could eat, but it was invariably some that had been discarded by everybody else. The fact is the cheese of to-day is made to suit the people. The cheese makers are not all dishonest men, and rogues; they are fully up to the standard of the people around them. People now prefer skim cheese to full creams. If we are going to affect any reform in this matter let us go back to the first principles and devise new stomachs for the people of this country.

Further laws now enacted would have about the same effect upon the business as the game laws have upon the shooting of game out of season.

What I wish to get at is this: Until you get the sentiment of the community up to where they will enforce the laws, your fault-finding and grumbling will avail little. I say this with all due respect to the Illinois State Dairymen's Association.

This matter of adulteration in butter and cheese is but a small part of that being carried on in different articles of food. How many persons are there who can remember how old-fashioned sweet wheat bread tasted before this patent process flour, an undigestible stuff, became common. And in fact in the list just read there is scarcely an article of food but what is being adulterated. I don't know how we were going to get around using unless we give up eating entirely.

In order to enforce these laws, or any kind of laws it is necessary to organize and work together in the matter, and don't forget while working that there are people in the community who eat something besides butter and cheese. I would suggest if you intend going at this thing in earnest, that you raise $10,000 to get the work going, then $10,000 more to keep it going, and so on until $100,000 is expended, and by that time you will know as an association whether it is profitable to prevent adulteration by law.

Adjourned to Thursday, A. M., 9 o'clock.

Thursday morning, convention called to order by Dr. Tefft at 9:30.

On motion it was decided to appoint a committee on nominations. The president named S. W. Kingsley, C. C. Buell and Calvin Gilbert as such committee,

C. H. LARKIN suggested that a committee be appointed to draft resolutions expressing the feelings of the Association regarding the late John Keating, a deceased member of the body.

C. C. BUELL, R. P. McGlincy and S. W. Kingsley were chosen by the chair to draft the resolutions.

Topic No. 5, "How May Manure be Most Profitably and Economically Disposed of?" was then taken up.

AHIRA THOMPSON: There are various ways in which farmers dispose of the manures from their yards and stables. An experience covering a number of years had taught him that the proper way was to commence drawing the manure out to his fields as soon as it began to accumulate in the fall. He had seen many of his neighbors who did not do this way, and some of them were strongly opposed to it. This plan not only saved a second handling of the manure, but it gave the land a chance to get all there was in it One of his neighbors told him when he commenced on this plan, that he would surely spoil his land by applying green manure. The next year he took this neighbor out to his fields and showed him the fine condition of his crops, and convinced the man that manure applied fresh was worth at least ten per cent. more than that which had stood in the yard all winter. The land where he put this fresh manure produced large corn-stalks and more corn than before. There were many wrong impressions, he believed, concerning the value of manure. He knew men who claimed to be, and were honest in their business dealings, who would take crop after crop from their lands and never repay or replenish them with even a rest. These same fields, if manured a few times would double their products. He believed it possible to manure corn land so that it would produce all stock and no corn, but a right quantity spread will more than double the amount taken off. He generally applied two loads of manure, yearly to each acre of grain land; this he had found to be enough.

Clark: A man of his acquaintance had for a number of years manured a forty-acre piece of land by plowing grain under when green, and found it profitable.

W. W. Bingham: Had tried plowing under green rye, and found that it put his corn back. He thought that the second year after plowing in corn would do well.

C. H. Larkin: This question of the profitable disposition of manure, like all other questions, involves the question of the cost of labor. You must judge of the profit of it only as compared with the cost of the labor required in disposing of it in a certain way.

He had desired to top dress a piece of meadow land and had put on the manure in the most convenient manner from a wagon, Right here he would digress a little and ask some one to suggest a good plan for a dairy barn. The way a barn was built had a good deal to do with the quantity and quality of the manure as well as with the manner of handling it. His experience was that manure drawn from barn fresh and applied was in all respects the best. And unless the soil is of a leechy quality there is nothing lost by putting it on fresh, for all kinds of grain. You can get a good crop of oats or corn from it the second year if you do not the first. Some farmers are at present trying the experiment of sowing clover and rye together and plowing them under to obviate the necessity of drawing out manure. They use from two to four quarts of clover seed with the rye, and after these have been plowed under the ground is again seeded down. He had been trying this but did not know yet whether it is a success. In all his experience he had never got land too rich.

He always sows oats the first year sod is broken, and he never failed to get a good crop. He thought we had an almost unlimited amount of wealth in our soils.

Use clover as suggested. If used for manure under the right conditions it added wonderful richness to soil.

He didn't take much stock in this idea of rest for soil. It needed development more than rest. His idea of rest was rotation in crops. Land is better when it is constantly producing something. He had tried salt on his land, but not enough to be able to advise in the matter. He thought, however, that all such applications of that kind acted simply as stimulants. The barn question was an important one in considering the disposition of manure. He would like to know if any of his hearers had ever used a manure cellar in his barn. He was well aware of the fact that if we saved liquid part of manure we saved a great deal. He had lately been saving this soft manure. He believed that these cellars to catch liquid manure were apt to be dangerous on account of poor ventilation. If there was an arrangement whereby this liquid manure could be drawn off to the fields with the solid matter you would save a great deal of that offensive barn-yard smell and would save the best part of it.

The matter of sub-soiling was intimately connected with manuring. He had had some experience in sub-soiling. To carry it on profitably needed brains. He had noticed that some soils were almost ruined by sub–soiling ing, and others were improved.

Calvin Gilbert: Had attended meetings of this Association for years and had heard this question of the disposition of manures discussed from time immemorial; but he had seen that men would hold to their opinions; no matter how things were discussed, they would not learn anything. He thought he knew something about manures though he had retired from farming life, and would like to tell the dairymen something he knew by experience. About this question of manure, he supposed Thompson knew more than he, however he didnt't take much stock in any of these scientific farmers who knew everything about farming but the practical part of it. Greeley knew a good deal about theoretical farming, but little about the practical part of it. All who had spoken on the subject favored top dressing, but he would not thus use manure under any circumstances. In spreading it the best part of it evaporates and you lose that, but if you plow it in as fast as drawn out you save all the valuable qualities, and you can by doing this make the poorest land rich. We should alternate crops and we would notice very favorable results.

His neighbor saved all of his liquid manure by having trenches made behind his animals.

LAWRENCE: After 44 years of experience as a farmer he had come to the conclusion that the sooner he got manure onto the land the better results he would have. Leave it in the barn-yard and you lose the best of it. If you draw it out in the Winter, the rain that would waste it in the barn-yard will wash the substance of it into the soil. He had a neighbor who was a very ignorant man so far as books were concerned, but who knew how to make money. He made his money by raising grain, cattle and hogs. In the month of June, as soon as he was through planting his corn, this man hauled out all his extra straw and spread it on his pasture. After the June rains came the grass soon made its appearance above the straw and in August he always had splendid pastures when other farmers were suffering from drouth.

He, (Lawrence) used clover a great deal in manuring, kept some sowed every season. One crop of clover plowed in would enrich the land much more than we imagined.

C. C. BUELL: Was much interested in the question of handling manures. His idea was that we should draw out and spread manure daily. In Summer he did not draw any out from his yard unless it was being wasted by heavy rains. He liked the idea of saving fodder in Silos.

He finds a wide-tired wagon a great convenience, one of these old-fashioned low ones. With one of these you can draw out manure when the ground is breaking up in the Spring, when you can't use any other wagon. He didn't believe that much of the valuable part of manure evaporated by being exposed to the air. He spreads his so that it plows under easily.

DESCRIPTION OF HIS COW STABLE.

Frame building 42x56. Three sides of it was of wood and the other of stone. His tying posts instead of being length-wise of the building were put in short rows across it. He liked these short rows because cows could find their places more easily. He has on each side four double-sash windows, for he believes in having a light barn. Has eight large doors for entering the barn. These can be fastened on the inside by buttons, or left open as required. He can drive through if he wishes. Has an under drain running the entire length of building which opens at his horse manure pile. In this way he saves all of the liquid manure. He has a platform for the cattle to stand on so that none of the liquid ever stands in the barn. In the morning when he goes in he finds his stables very dry and everything clean. He can go to milking at once with his Sunday boots on and never have them soiled. The liquid all flows into this sub-earth drain. This drain is an inexpensive affair,

The upper part of his barn he uses for a carriage and warehouse. The barn complete did not cost more than $1,500.

PATRICK: (Digression.) Thought there was no branch of farming so neglected as the care of pastures. He believed that the average pastures of this country could be doubled in value by a little attention. We keep our cattle on the same pastures all Spring and Summer and when August comes with its drouth we are out of feed. Every farmer should have several acres of rye green in August that cows may have plenty to eat all the time. He had seen an acre of ground so well manured that 1,500 pounds of hay was taken from a lot containing one acre, which had kept one cow all season.

GEO. SANDS: Said he was stubborn enough to argue that top dressing paid. He had tried it enough so that he could safely hold to his own opinions in this matter of manuring land. He used only top dressing and would say that if any gentleman thought top dressing would not do for all grains and grasses, he could prove him wrong very quickly. He gets his manure out in the Fall and Spring, and has tested it in many ways.

C. C. BUELL: Was in favor of sufficient tillage and would like some experiments in this matter tried.

R. M. PATRICK thought the speakers were wandering from the subject. His idea on this question was to get out manure to the fields as soon as possible. He thought this the only sensible way to dispose of manure. The most of it would of course have to be spread on the fields in Winter. He considered the labor question an important factor in the economy of farming. Getting out manure in the Spring was inconvenient and hard on teams so that the Winter was the best time by all odds to draw out.

CLARK: Considered broad-tired wagons very useful for hauling manure in Spring. Every farmer should have one of them.

At this point T. McD. Richards was seen in the audience and was called upon to read his paper on Topic 5, "How May Manure be Most Profitably and Economically

Disposed of?"

THOMAS McD. RICHARDS, WOODSTOCK, ILLS.

Mr. President and Members of the Illinois State Dairymen's Association:—The practice of manuring soils is as old as civilization. The Greeks fertilized their fields for a thousand years previous to the christian era. The Romans in their purest days highly cultivated and manured their small farms, indeed agriculture for a considerable period was their chief pride and passport to distinction. And so along down the centuries as civilization and population have increased, better culture of the soil, and greater care and economy in the saving and application of manures has followed almost as a matter of necessity. Should the densely populated nations of the world entirely neglect the application of manures for only a short period of years, starvation would be the dire result, hence the older nations ransack battlefield and the islands of the sea for materials to enrich their farms. The subject before us then is an important one, for not even our comparatively virgin soils can long endure the neglect that many farms have been and still are subjected to. A frequent rotation of crops, with the application of all the manure possible to make and save on the farm, either on or near the surface is a safe practice, that will hand our farms down to coming generations in a fertile condition. I hold that no man has a right to live, who continually impoverishes his soil to the detriment of posterity. I have indicated that manure can (most profitably) in my view be applied at or near the surface, and (economically) I would as a rule say spread as you have, green manure on corn or grain fields I would plow under shallow for convenience in putting in crops. If I did not plow under in the Fall would spread on the surface instead of dotting the field with little heaps, always a nuisance if you wish to plow in early Spring. On meadows I would apply any kind of barn-yard manure, green or otherwise, soon after haying, if possible, or all along the Fall and Winter, being careful to spread evenly, and also rake the hay crop without the admixture of strawy manure, and to do this no rake equals the old revolving wooden rake. Meadows top dressed with barn-yard manure once in three years, may be permanently kept in grass and will generally furnish large crops of hay. As a general rule, however, I would recommend plowing all suitable lands for grain tillage often, to avoid the increase of our different worm enemies that so often injure and destroy our corn crop, when long seeded meadows or pastures are plowed up. A top dressed meadow often plowed is in prime condition for corn, grain, vine or root crops, and as an item of "profit" and "economy" a portion at least of our manures may wisely be spread on our grass fields. Well tile drained soils are in the best possible condition to be benefited by manure, in fact tile drainage alone makes most soils more fertile. A large share of the food of growing crops comes from the atmosphere and tile drained lands allow the atmosphere to penetrate all through the soil, warming and disintegrating as well as removing surplus moisture, hence manure on such lands is easily assimilated with the soil and in the best condition for plant food. Dairymen of Illinois, though your business is arduous and confining, you have the consolation of knowing that you are improving and enriching your farms instead of impoverishing them as was the practice of earlier days. I hope and trust also that you are improving your minds as well as your farms, for no human being is worthy the name of man, who voluntarily makes of life only a perpetual round of drudgery. Labor is the foundation of all that is great and good in all ages and in all lands. Without labor, no civilized nations can long endure. And although labor is man's highest boon when intelligently applied, it may easily become man's fatal foe by over use and unwise practice. Pause, fellow farmer, in your ceaseless rounds of toil, think more, read more, plan more, make not of yourselves men beasts of burden, but intelligent men and women with intelligent families growing up around you. Illinois is a great state in every sense already, and yet she is only partially settled and tilled. When the whole area becomes properly cultivated and manured as some older countries already are, Illinois can support as many millions as the United States now contain. One other thought presses itself for the consideration of every intelligent producer. It is not enough that our farms are highly cultivated and enriched, if when all is done, a few Railroad Lords continue to exercise the power to fleece us at their will. Now, the larger our crops, the more unmercifully are we treated by these magnates, who already, almost wield the destinies of this country, controlling legislation and frequently elections at their will. The question is before the American people, and intelligence and concert of action can only secure our just rights. The country needs less railroad millionaires and more intelligent, independent farmers.

S. Patrick said he would like to return to Topic No. 4, for a little while as he had been making some experiments of interest, bearing upon that topic: He had found that the cost of producing Winter milk was simply the cost of grain fed. 16 pounds of corn and oats per day mixed equally in bulk fed to a cow producing on an average 22½ pounds of milk per day, would bring the cost of milk up to 53½ cents per hundred pounds. The hay fed he considered simply offset the grass in Summer. He didn't feed all cows alike. He fed them according to the amount of milk they gave. He considered that his Winter cows would keep up their average of milk until grass came.

Cohoon: Would like to know which was the more valuable, coarse or finely ground feed.

Patrick: Thought finely ground best.

Buell: Said he would like to express himself in favor of small milkers that would make one pound of butter to every fifteen pounds of milk. A cow that would make such milk deserved just as much attention as the one which gave milk requiring twenty-five pounds to make a pound of butter. The Kane county dairymen preferred the cow that gave a large quantity no matter what the quality, but this ought not to be.

Adjourned until 1:30 p. m.

AFTERNOON—THURSDAY.

Convention was called to order by the president at 2:15 p. m., and the discussion of Topic No. 6 was resumed.

G. P. **Lord** was called upon, and after a few words, introduced Hon. E. C. Lovell, who spoke at length upon the legislative question.

He said he understood that he was to be called later in the discussion, consequently was hardly prepared to take up the question at this point. He heard it suggested by a member of the Association that it might be that the legislation needed would have to come through national government rather than state, and he believed that there was just where we would have to look for aid in this matter. It has become an open secret that all the necessaries of life are being adulterated. An ordinary observer can see what is being done in the way of adulterating food, but we do not know how far it is being carried only as we are informed by the scientific observer. Most of us have but little time to look into this matter and we are left to rely upon the honor and integrity of those from whom we buy, and the laws of the country. Now the question comes right home to us here in connection with this question: If we can't depend upon the honor of those with whom we deal what dependence can be placed upon the laws? He was not one of those who take such a dark view of human nature. Believed the average man will not generally and as a rule do that which he knows will, if found out, destroy the confidence placed in him by those with whom he deals. Our danger comes from those with whom we have nothing to do. We should insist upon it that we have some protection from those that don't care about us, or have no reputation to make out of us. It is to guard us from the unseen enemy and it seems to me that upon the national government we must depend for safety. Our inter-state relations are such that it would be impossible to get at this subject by laws of our state. Any person who knows anything about our laws knows that we sometimes find ourselves in a bad fix on account of these inter-state relations. In the matter of syrup adulterations you see how hard they are to get at—they are refined in New York, wholesaled in Philadelphia and retailed in Illinois. Our state laws do not cover the ground. We should ask the national government to take hold of it, and do something more than has been done. There is no doubt that in regard to the manufacture of articles in the state, state laws can be made useful.

He believed the dairymen should push this matter this Winter. Something had been done by our own legislature as this bill shows (reading the statute bearing upon adulteration of butter and cheese). This law if enforced and a proper pnnishment meted out to violators would, he believed, prevent anything from being sold without being branded with its true name. He had heard it said that there was already too much legislation on the subject; some matters have too much, but no one would presume to say that the enforcement of this statute would not be beneficial to the health of the country.

The following resolution was offered by W. W. Corbett of the *Farmers Review*, and adopted:

Resolved, That this association regard with satisfaction the movement now being made by the Chicago Produce Exchange for the enforcement of the laws of Illinois concerning the manufacture and sale of adulterated articles of food, and that we hereby tender to said Produce Exchange our hearty support and cooperation.

S. K. Bartholemew: Had hoped to here this topic discussed by men of more experience, and of a greater scientific knowledge of the thing than he had. Dairymen are full of whims concerning this feeding question. He had noticed that between dairymen and their cows there was a striking similarity, both were stubborn and both were greedy animals. A cow is never satisfied with her food, and if you give her a chance she will kill herself, and a man will do the same thing if you give him a loose rope.

The question is, what shall we feed our dairy cows. We are limited as to the amount of foreign food used, but we must have a certain amount of coarse food, such as straw, hay, etc. Neither one of these articles contains the qualities for milk to any great extent. Thought wheat bran was one of the best milk feeds known; after this comes oats and corn. The question is, in what proportion should these be fed. He believed it was generally considered that the grinding of grain was a benefit so far as it is used as an article of milk food. Grinding puts grain in a condition to digest well. Every man suits himself as to his manner and time of feeding. Every man feeds for profit, and believes he is feeding in the most profitable way.

He fed a mixture of bran, corn meal and linseed meal; the last he preferred to oat meal. There is no rule I can lay down here for feeding. I can only say that I think the best milker should receive the most feed. He was feeding at present about twelve pounds of meal per day—six pounds brans, four pounds corn meal and two pounds linseed meal. This mixture produced good results, as his cows averaged 25 pounds per day. He could produce 100 pounds of milk in winter for from 36 to 40 cents. His meal he fed in two messes. He let his cows remain out of the barn all day when the weather was not too cold. He fed on an average about 15 pounds of hay to each cow. The way he figured it, each cow's feed cost nine cents per day and her milk was worth 35 cents per day, so that each cow cleared him about $70 per year. He quit feeding oats, because they were too high.

McLEAN: Said he was glad to learn the secret of making money in the dairy business, nevertheless he thought it poor policy to be telling these secrets; every body will get them, then the profit is gone. But he could tell a better thing than Bartholemew. At Elgin they fed their cows sweet corn, costing them not more than 12 cents per day for each cow. This was cheaper than Bartholemew could steal the bran and draw it home. This idea of feeding bran he didn't like. It didn't make good milk, but sweet corn increased the flow and improved the quality of milk. His farm contained 100 acres and he kept on there 40 head of stock. (He objected to telling how wealthy he was but supposed it was necessary in this case.) He raises about 15 acres of sweet corn, sells the corn and feeds the stalks and nubbins to his stock.

C. H. LARKIN: (Called upon) said he commenced feeding sweet corn stalks to his cattle in the summer. His stock is put on the pasture about the first of May, and for some time after that they are not fed anything. In the summer he fed a very little bran, just enough to get his cows to go into the barn. Later in the summer he feeds a little cut corn which he sows for this purpose, and then, after furnishing the Packing company with his sweet corn, he begins feeding stalks and what there may be on them, until winter comes. In the latter part of the fall he often uses some other feed. These corn stalks, however, have often on them enough small ears to answer the place of other grain. He raised less hay each year. The place of hay was being supplied by corn stalks. He sowed considerable Hungarian each year, and likes it as a fodder. At the present time is feeding field corn stalks instead of sweet corn. Uses with it cut straw, which makes a good combination.

Sometimes fed for grain feed equal parts in bulk of ground corn and oats. Put this grain feed in front of cattle between the mangers. It makes a good storeroom and the feed is always convenient. His grain feed he always got in while the roads were good.

COHOON: Had found it very difficult to save seed from his sweet corn.

LAWRENCE: Had never had trouble keeping his. He picked it when ripe and hung it out of doors to cure, and never put it near the fire.

LARKIN: He had tested sweet corn a number of times to see if fire heat would destroy the germs. He had even dried it in the oven, and got it so hot that it was colored, yet it grew all right when planted in the spring. He planted his corn with a planter or drill.

COHOON: Planted it with drill about as thick again for fodder as for husking porposes.

Topic No. 8 was then taken up, and R. M. Patrick read the following paper upon the subject;

R. M. PATRICK'S PAPER.

"Does the Future Prosperity of the Dairyman Demand that the Factorymen Skim Less and Make a Uniformly Better Article of Cheese?"

During a little more than two months and this during a time of universal activity and business prosperity, we have witnessed a decline in the price of skim cheese from 12 cents to about 7 1-2 cents, being fully 4 1-2 cents per pound on the average make. Had there been a great accumulation of cheese in this country and Europe at this time, or had business throughout the country been prostrated, then either or both of these causes might have naturally produced this decline. But as there was no great accumulation of cheese either in foreign or home markets and business in our own country unusually active and prosperous, we must then look for some other cause for this great decline in the price of skim cheese and the demand for them.

During the year 1880 almost 350,000,000 pounds of cheese was made in the United States, or seven pounds each for the 50,000,000 of people in the United States. 125,000,000 pounds of cheese were exported, leaving for actual consumption four and one-half pounds for each inhabitant in the U. S. One pound of good full milk cheese worth 12 1-2 cents per pound is said to be worth for food as much as 2 pounds of beef costing 20 to 25c. Yet only four and one-half pounds of cheese is used by each inhabitant in the United States during the year while 25 to 40 pounds of beef is consumed by each inhabitant during the same time. From the best information at hand it is evident that the consumption of cheese in our country does not increase with the population. In many of our cheese making districts the farmers who produce the milk from which the cheese and butter is made are much of the time without butter and cheese upon their tables because the cheese is so heavily skimmed as to become nearly indigestible and worthless as an article of food. The manufacture of good cheese should and would undoubtedly increase largely the demand for foreign markets and greatly increase the consumption at home. The making of so much poor heavily skimmed cheece has beyond a doubt largely decreased the demand for foreign markets and so decreased the consumption at home as to be beyond a doubt the main cause of the great decline in prices.

The strong competition among factorymen and the demand of the patrons for large dividends in far too many cases induces both manufacturer and patron to sacrifice future prospect for present gain.

I am fully convinced that a continuation of this product will so check consumption of cheese both at home and abroad as to make future markets unreliable and the business unprofitable. And that the only safe cause is to make cheese good enough to stimulate consumption to such an extent as to make a ready market at remunerative prices for all the cheese the country can produce.

G. P. LORD: Was next called upon to speak on this topic. He said that all would agree that cheese had been well made and the question of skimming must depend upon the chance that the manufacturer got to make from milk after making butter. Willard told about cheese made in Norway, rich in appearance, nutty in flavor that could be spread like butter, which, he was told was skim cheese. He (Lord) had a high opinion of a man who could make good cheese from skim milk. An attempt had been made by this association to have the state establish an experimental station. If by the means of such a station we could make first-class cheese out of poor milk we would have gained an important point. We all know that after cheese is made and the whey set in a vat, a large number of cream globules will arise on the whey. Mr. Wilder, of Wisconsin, said that he made butter from the skimmings of his whey vat, with which he greased his cheese. Those who make cheese should know whether they are making all they can out of the milk.

S. K. BARTHOLEMEW: It was not his intention to say anything against skim cheese—he wouldn't say anything lest he should hurt the feelings of his Elgin friends. This question had been discussed before, and both makers and dairymen will tell you that they are after money, and the manufacturers are anxious to make skim cheese, simply because they make more out of it. You see the position we're in, we wish to make all we can. At this time of year you can get 12 pounds full cream cheese from 100 pounds of milk. This is worth 11 cents per pound, or $1.32 gross for the milk, which nets the patron $1 04. Now take it the other way, the manufacturer skims his milk and makes three pounds of cheese from the same quantity of milk, which bring $1.72 gross, or net amount of $1.33 for the patron. Now the question comes, will a man who is in the habit of skimming light in order to keep up the quality of cheese be willing to allow his competitor to make a dividend of 20 or 15 cents more than himself, very long. I think not. It is merely a question of dividends. The plan by which a man can make the best returns to his patrons is the one he will adopt.

R. M. PATRICK: Said he did not advocate the making of full cream cheese in winter, but the making of a better quality of skim cheese.

S. K. BARTHOLEMEW: Said the trouble was, those cheese were sold when cheese was so high that they brought more than they were worth.

HON. E. C. LOVELL: Asked if it was not a fact that skim cheese if kept six or seven months would not be better cheese than when fresh.

D. E. WOOD: Said that skim cheese would not keep so well as full cream cheese.

Topic No. 9 was then taken up, and C. C. Buell read the following paper:

BY C. C. BUELL, ROCK FALLS, ILL.

"The Butter Dairy—How to Make it Profitable."

There need be no apology for discussing this subject in a dairymen's convention. Conceding peculiar advantages to creameries with their various methods of management these are not always available even if they be desirable, and the fact remains that a greater part of the butter consumed comes, and will continue to come, from the butter dairy distinctively so called. The late improvements in dairy apparatus make the well managed dairy a full rival of the creamery as to quality of the product, not to claim anything more. No greater service, therefore, can be done the masses who will and must eat dairy-made butter, and the large class of farmers who must and will make dairy butter than to discuss the economics of this branch of the dairy business.

The special field which this paper is destined to cover begins with the delivery of the milk from the milking stable. There are many questions which in a certain order of relation would precede this, but they are not so distinctively important in any view as those which come after. We neglect the many for the purpose of giving more specific attention to a few. The pivotal idea of this paper is *profit.* A few things we shall assume; we shall assume that the old style method of setting milk in six, eight, or twelve quart pans is too far behind modern improved apparatus for cream raising, considered as to cost of labor, buildings and fixtures, to be entitled to more than this casual mention.

We shall assume that the Swartz, or Swedish system of cream raising, or the same as modified by American practice, has produced results equal in respect to quality of product of those of any other system of practice, Deep setting in cold water, or ice cold water is the fundamental idea on which the profitable dairy in the present stage of the art of butter-making must be managed. What the centrifugal machines may hereafter develop, remains to be seen. So far as general evidence goes it would seem to establish the conclusion that in order to secure the largest yield and the best quality of cream. 1st. The milk must be set warm. 2d. It must be cooled quickly. 3d. The milk must have free ventilation. These the Swartz system and the best American practice secure, and they may be made the simple test by which the practical dairyman may judge of the various devices for cream raising presented to his attention. After these are secured there remain only the economical question as to cost of apparatus, cost of buildings, and cost of labor in operating. To some of these points we will address ourselves, further on.

Another element of importance which enters into this discussion is the size of the dairy. We think the maximum of profit in a dairy can not be reached with less than twenty cows. Probably the number should be not larger. The number should be large enough so that the business shall constitute the leading business of the manager, and command his best thought and attention. It should be of sufficient magnitude to warrant the principal in procuring and reading the best dairy literature current, in spending the necessary time and money in attending the dairymen's conventions, and in thoroughly posting himself in the various lines of thought and investigation pertaining to the business. We believe the five and ten cow dairy will, except under peculiar circumstances, labor under disadvantage. The milk from such as a rule had better go to the factory or the cream to the creamery. In general it is to be remembered the larger the dairy the less in proportion the cost of building fixtures and labor for running it.

Assuming then that we have a dairy of standard quality, numbering say 20 to 100 cows, let us proceed to show how it can be managed at a profit. Taking the Swartz system of cream raising as the key to the situation, let us proceed.

In the first place we must have a dairy building—but not necessarily an expensive building. But we must have an abundance of water. We have seen springs that were valuable, but the best thing usually available is a good well. If you have not this at least don't go into the butter dairy business. Select a site for dairy building which has good natural drainage, and as most farmers need the waste water for stock watering purposes either in Summer or Winter or both, let the drainage be towards the cattle yard. Erect a building say 16x24 with stone foundation walls. Eight foot posts will be high enough. Cover the sides with good drop siding and the roof with good shingles, leaving ample openings for windows and doors. If well built no further expense on wall and roof is necessary. Floor one-half this building with good cement, from which water will readily flow into a good drain. Cover the remaining part with good wood floor draining towards the cemented part. At the cemented end erect an elevated tank large enough for supplying all needs in the dairy room as well as the stock in the yard. Locate the well just outside (or inside) convenient to supply this tank with water by a force pump run by a cheap horse-power. Locate the horse-power at the other end of building and outside, the shafting to run churn and pump being over head and just inside or outside the building, according to the notion of the builder. The wood floor makes an appropriate place for churn, butter-worker and stove. The cemented floor will accommodate the small water tanks or milk coolers. No better cream can be produced than with the common setter standing in a pool of cold water, If the setter is used let these stand in small pools of proper size with covers for protection against flies or dust in Summer and against freezing in Winter, these pools being supplied by the larger and elevated tank before described. If any of the patent labor-saving devices for cream raising are used (and some of these are really labor-saving) they can be supplied with water in the same way, the water going to the stock yard. A cheap pipe for this purpose which can be laid under ground with a constant descent is a 4x4 scantling with a channel sawed in one side and covered with a band.

With these fixtures the daily routine of work in Summer would be about as follows : At milking time in morning a horse with good spirit and hood-winked would be hitched to the power, and the pump put to work. Water enough for the entire day would be pumped during the milking time. The churning could also be done at the same time or afterward as convenient. The horse-power would be available in the same manner at evening, and thus there would never be a lack of pure cool water to control temperature of milk or cream. The abundance of pure cold water thus supplied would contribute largely to the purity and sweetness of the entire dairy room. We have seen a few establishments built on the economical plan we have described, which were turning out just as good product as can be made and at the minimum of cost in labor and expenditure.

This arrangement leaves no place for the use of ice, and indeed the cost of a good ice house would go far towards providing the whole thing. We have here made no provision for the keeping of butter for which of course special provision as in other cases would have to be made.

If we summarize, the expense of outfit would stand about as follows:

Cost of building and elevated tank not to exceed	$100
" " force pump and say six feet pipe	20
" " power and necessary shafting	60
" " churn and attachments	30
" " butter worker	10
" " cooler and cans	40
Total	$260

We have purposely omitted the cost of well and tower fixtures of pump as these are so variable. We have also omitted water heating arrangements. A common cook stove (useless for other purposes perhaps) with a large, square, galvanized iron boiler, and costing altogether less than ten dollars, has done very efficient work in such a place. A small feed-cooking steamer would be better.

The estimates we have made we consider ample for a dairy of fifty cows and believe they would meet the needs of a still larger dairy. They amount to only about five dollars a cow all told. Something should be credited for the value of the waste water for stock. We have known more than one-third of this amount given for the royalty on a patent pan stove. We claim nothing for the beautiful in our plan, although it is not inconsistent with any amount of ornamentation which money and good taste could bring to bear. We have had in mind the intelligent, enterprising farmer with small means and a mortgage on the farm perhaps, who is thinking of going into the dairy business not for the æsthetics of it, but for the last dollar it will pay. I will add nothing more except to say that the product, when well made and neatly finished for the market, is only to be handled on sound business principles, and a fair profit is likely to be the result.

At the conclusion of the paper the president then asked if the chairman of the legislative committee was ready to make a report. Hon. G. P. Lord, the chairman, replied that they had no report to make.

LAWRENCE moved that the present legislative committee be reappointed for another year. After the adding of several names, making the committe stand as follows, the motion was carried.

LEGISLATIVE COMMITTEE:—G. P. Lord, M. H. Thompson, Gen. Parsons, H. W. Meade, Jos. Tefft, C. H. Larkin, J. R. McLean, E. C. Lovell.

M. H. UNDERWOOD: Suggested that the committee make it their duty to see to the enforcing of the laws concerning butter and cheese adulterations.

DR. TEFFT: Was asked what the real duty of the committee was, and he stated that it was to endeavor to have the association recognized and aided by the state and to get an experimental dairy station established.

MR. LOVELL: Said he could give them some reasons who the committee did not succeed when at Springfield last Winter. He had the honor of introducing the committee to the special committee appointed by the legislature, and was present when they met together. He thought they worked well and accomplished a great deal in the short time they were there. They had a law passed which should be better enforced than it has been. We succeeded in getting a bill through the House and recommended by the Senate committee appropriating $3,000 for this association, but it was lost in the Senate. In talking with members of the Senate and trying to persuade them that the benefits from such an association would be great, he was told that they thought it was the heighth of impudence for dairymen as well posted in their business as the members of your committee to come down there and ask the state to appropriate a certain amount for their instruction in matters about which they knew more than anyone else. He said the opposition came mainly from the Southern part of the state. He was in favor of sending the committee back there to work.

Adjourned until 7 p. m.

The evening session was called to order at 7:30 by the president.

M. W. Corbett, of the *Farmers' Review*, offered the following resolutions, which were adopted.

WHEREAS, It is a fact that *pleuro-pneumonia* and other contageous and infectious diseases among cattle, and cholera among swine, prevail in various localities in this country, whose spread would bring ruin to our vast live stock and dairy interests, therefore be it

Resolved, That this Association hereby most earnestly urge upon Congress, now in session, the passage of enactments that shall prohibit the further introduction of contageous and infectious domestic animals' diseases from abroad, and also from one state to another; also further enactments that shall effectually stamp out said diseases wherever existing within the territory of the United States.

The committee appointed to draft resolutions concerning John Keating's death made their report which was unanimously adopted.

Your committee, appointed to draft resolutions of respect to the memory of deceased members, begs leave to offer the following:

WHEREAS, Since our last annual session, an All Wise Providence has removed by death from our circle John Keating, one of our earnest, practical and energetic members, always alive to the interests and needs of the Association. Therefore be it

Resolved, That in the death of Mr. Keating this Association looses an earnest and worthy member, and while bowing in submission to this will, we deeply feel the loss we have sustained.

Resolved, That these resolutions be properly attested and forwarded to the family of the deceased and that the same be published in the annual report of the Association.

R. P. MCGLINCY,
S. W. KINGSLEY,
C. C. BUELL,
Committee.

BY GEORGE P. LORD.

"Milk, its Value and Importance as an Article of Food."

The food question is as old as the human race. What to eat, and how to procure it has engaged the attention of mankind in all ages and countries.

Probably at no time in human history has the question of food assumed greater importance than during the past two or three years.

From Ireland, and Persia, and China, and now from Russia, has the cry come, give us food or we die.

To meet this great want of the nations of the old world, the people of this country have laid their broad acres under contribution, and with such results that our railroads and canals and steamships fairly groan under the burdens which have been thrust upon them, while our graneries and warehouses are full of the golden grain.

Living, as we do, in the midst of such abundance, we can hardly realize that famine has been more destructive to human life, than the most sanguinary wars that have deluged the world with blood.

So long as it continues to be the policy of the governments of Europe to keep all the vigorous young men in the army, leaving only the infirm, and the crippled, and the aged men, and the women to cultivate the soil, it will be the mission of the people of these United States to feed a hungry world.

But it is not the question of food in general, but a special kind of food that is to engage our attention.

Let us turn then to the consideration of the value and importance of milk as an article of food.

It will doubtless be conceded by all that milk is a very convenient article to have in the family; that it is very useful in the culinary department, and that it is almost indispensible as seasoning for tea and coffee.

How few people in this land that is literally "flowing with milk" have ever given any considerable attention, or thought, to the intrinsic value of milk as an article of food.

How many here present are prepared to give credence to the statement that a gallon of milk will furnish an amount of nutrition equal to two and three-quarter pounds of boneless beef, or that twenty millions of steers of the average weight of fourteen hundred pounds gross, will not furnish an amount of nutritive food greater than that contained in the annual milk product of the United States, and yet such are the facts.

Nor should we overlook the fact that milk is easily digested, and is therefore a healthful food.

Every principle of economy therefore, is against the practice of selling all the milk we produce, and supplying our families with food in the form of poor and indigestible beef, at a cost per pound equal to, if not greater than we receive for a gallon of pure milk.

The constituent parts of milk, as all may know, consist of fat, or cream, caseine, and sugar of milk, with a small per cent. of ash, combined in just proportions for keeping up the animal heat, and supplying the blood, the brain, the muscle and the bone, or in other words, for the building up and support of the physical system.

If this fact can be thoroughly impressed upon the minds of the people, the daily use of milk, as an article of food, will be greatly increased.

Consider for a moment the situation of the business men in the large cities.

They go home from their counting rooms so fatigued in body and mind that they are incapacitated for healthful or refreshing sleep.

After a restless night, they have little or no appetite for breakfast, and so after a slight but hasty meal, they urge themselves to their daily tasks.

Is it strange that long before the dinner hour arrives, such men feel that it is absolutely necessary for them to take something to support their physical system?

It is this felt need of the system that leads many of our business men to resort to the saloons, and partake of the various stimulating drinks that afford temporary relief to their physical depression.

They do not crave ardent spirits for the love of it, or at least not until a constant use of it has become a fixed habit with them.

Now let it be understood by those busy men that a glass of milk will afford relief to their physical depression, that it is vastly superior, for that purpose, to all the stimulants ever devised by man, and what will be the result?

Evidently there can be but one result, and that will be that our commercial and literary and business men will discard all stimulating drinks.

If you will refer to the Chicago *Inter-Ocean* of the 13th of Dec. you will find an article entitled "The Duration of Life," in which the writer attempts to show (by the comparison with animal life), that the duration of human life should not be less than one hundred years.

He argues that if men were as considerate of themselves as they are of their animals, their lives would be prolonged through a century, and signigcantly enquires whether human beings ought not to be treated with as much consideration as the beasts they employ.

Now we know that the owner of a speedy horse would not resort to stimulants to keep up the physical force of his horse, when it is to be taxed to the utmost.

He knows that a drink of oat meal gruel given to his horse will refresh and invigorate him, and enable him to bear the strain, and perform the task.

So our overtaxed business men should avoid all stimulants.

They should use only such beverages as will nourish and invigorate the system.

They should use milk.

The Divine Chemist made no mistake, when he compounded the ingredients of milk.

He made it the true "Elixir of Life," and while the people who use it may not live to be a hundred years old, they will be vigorous and able to perform the duties, and enjoy the pleasures of life to a good old age.

Allow us to suggest to the enterprising dealers in this life giving beverage, that they establish places, at central points in all of our large cities, where this refreshing and health-giving drink can be obtained by the people.

We have no doubt they would be surprised at the success of the undertaking, and extent of their patronage.

There is another view of this subject which we desire especially to call attention to, and that is the absolute necessity of milk, as the food of our children, if we would save their lives.

That this may be fully impressed upon our minds let us turn to the report made by our commissioner to the Paris Exposition, on the " Preparation of Food," Vol. 5, page 18, of the report.

He says, " The astounding developments of mortality among children in France, lately made to the Academy of Medicine in Paris, a mortality which reached the frightful figure of ninety per cent. in certain communes, made men turn their eyes eagerly in every direction for new aids in arresting the destruction."

Now what aids do you suppose eminent chemists would devise for arresting the mortality among children?

We should expect that they would devise substitutes for milk.

And so we find that Professor Liebig, among others, had on exhibition at that Exposition his "famous substitute for milk."

And we would say that we know of no scientific gentleman who has given more thought or study to the preparation of human food, or whose reputation stands higher in that department of effort than Prof. Liebig.

Listen now to what the commissioner says about this famous preparation,

He says: " This artificial milk has already acquired considerable extension in Germany, England, and other countries, and in many countries it is the food furnished by charitable societies to the children of poor mothers, to such as are either obliged to abandon their children, or to place them in the nursery establishments by the day."

He further states that " no official report on the success of this new alimentation has yet come to my knowledge. Nevertheless here in France the milk has been tried by Dr. Depaul, professor at the school of medicine in Paris, on four children of the Foundling Hospital, and they all four died, two in two days, one in three days, and one in four days, and all alike with bilious evacuations."

Could any experiments be more dreadful in their results?

One would hardly expect an official report from the officers of those "charitable institutions" that furnished such an aliment to the children of "poor mothers," provided their experiments in the use of such food were similar to those of Dr. Depaul.

We should rather expect to hear those "poor mothers" exclaim from all such destructive charities "may the good Lord deliver us, and our children."

We do not know whether or not the percentage of mortality among children in any of our large cities reaches the "frightful figure of ninety per cent," but we all know that the mortality is very great.

Nor is the mortality confined to the children of the poor, for if you go through the lanes and alleys of any of our large cities, you will find them swarming with little ones, while the homes of the rich are nearly as silent of infantile voices, as though the angel of death had invaded all those places, and swept their loved ones into untimely graves.

Not alone on Judean plains are there "Rachels weeping for their children" slain by a bloody tyrant, but in every city there are mothers weeping for their children that have died for want of proper or sufficient nutriment.

Not only in Germany and England, but in this country as well, there may be found various substitutes for milk, which for aught we know are as destructive to human life, as that used by Dr. Depaul in the Foundlings Hospital in Paris.

These compounds are kept by the Pharmaceutists in our cities, and we understand they find a ready sale.

We have one of these famous preparations in our hands.

Like all others it is rich in promise, and yet no official reports of its saving or destructive qualities, so far as we know, have ever been made public.

You will notice that all who compound these famous substitutes, claim that their preparations are nearly akin to milk, thus acknowledging that milk is the best food, and that the scientist who can compound an ingredient as wholesome, and nutritive as milk, has rendered a valuable service to mankind.

But why should we fly to doubtful substitutes for food for our children when we have such an abundant supply of milk?

The objector to milk claims that milk that is distributed in our large cities is not pure, or that it has been adulterated.

We know that a great deal has been said about the impurity of milk, and the want of cleanliness of our dairymen and dairymaids.

Were one to believe half that has been said or written on this subject, he would become convinced that all the neatness and purity had been transferred from our dairy industries to the slaughter houses and rendering establishments of our great cities, and that all the impurities of the slaughter houses had been mixed in with our dairy products.

In reply to all such slanders, allow us to say that our dairymen, and dairymaids, and dairy-barns and milk-houses are the very perfection of purity and neatness, as compared with the persons and surrounding where that vile substitute for butter is prepared.

And here we would say that, were the slaughter houses and rendering establishments as free of police surveilance as are our dairy industries, they would become intolerable nuisances. Not by legal restraint are our dairies kept pure, but because the dairymen of this country have invested too much money in this industry to be willing to jeopardize it for want of cleanliness or care.

And here we would state that milk drawn from a healthy cow that is fed on wholesome food is perfectly pure.

If any impurities are found in milk it is from carelessness or design,

And now as to the adulteration of milk.

When we consider how cheap milk is, we are surprised that anyone would be guilty of adulterating it.

Milk is probably worth less per pound at wholesale in any of our Western cities than chalk.

Its principal cost to consumers, is the expense of its delivery to their families.

It costs nearly as much to deliver a pint as it would to deliver a gallon of milk to any one family.

It is claimed that there are two kinds or classes of adulteration of milk, one by the compounding of foreign substances, as chalk or kindred substances and water, the other by the subtraction of the cream, or by skimming the milk.

All such adulterations may be detected with a very little effort on the part of the purchaser.

If the lady who has charge of receiving the family supplies will take a small testing glass and fill it with milk when received, and during cold weather warm the milk in the testing glass, then set it one side for a few hours, she will not require the aid of a chemist to inform her as regards the quality, or purity of the milk.

All foreign substances like chalk will be found in the bottom of the glass, and the cream, if any, will separate and rise to the top.

If on examination the milk in the testing glass is free from dirt or other foreign substances, and the cream development is equal to about one-tenth of the milk when put into the glass, then the milk is fully up to the standard.

We submit that this method of testing milk is very simple.

We know of no other article of food in which adulteration can be so easily detected.

After this brief survey, we are prepared to consider the final report of our commissioner to the Paris Exposition.

In doing this we should keep in mind the fact that the most famous preparations of infantile food that could be devised by scientific men were on exhibition at that exposition, and that the whole subject was being investigated in the light of the "frightful mortality among children," and the felt necessity of devising some means of "arresting the destruction."

After a full consideration of the whole subject, he reports that, "In France the people are satisfied in this emergency with cow's milk."

"The milk of a cow, with the addition of one-fifth water, and a little sugar, is not only a nearer approximation, it is the nearest approximation" to the food which nature has designed for children.

"Why then" he adds "fly to a doubtful chemical composition, when we have at hand so natural and safe an aliment as cow's milk."

This was followed by a paper from Mrs. F. S. Bosworth.

BY MRS. F. S. BOSWORTH, OF ELGIN.

"The Farmers, as Contributors to the National Prosperity."

In considering the well-being of our nation, we shall take into account, not only its material wealth, but its wealth of intellect and moral power, and the industry which contributes most largely to all these must of necessity form the foundation of our success as a people. To affirm that agriculture lies at the basis of our material wealth, or in other words that all branches of industry are to a great extent dependent upon what the soil yields, is but to repeat what has often been asserted. It is a matter of fact that when the land of our country yields bountifully, all trades expect to thrive, unless by some manipulation the producer fails to receive just remuneration for his labor in the sale of his produce.

Although productive soil is indispensable, it must receive cultivation and the owner of the land shall derive a compensation equivalent to the profit which a merchant makes in the sale of his goods.

If for any cause the year proves an unprofitable one to the farmer, be he a tiller of the soil, or one who derives his income from dairying, its effects are felt by all in our cities and towns engaged in merchantile business, and perhaps such a state of things is more injurious to them than to the farmer himself, since food, that great essential, which the farmer produces for his own consumption, all others must acquire by purchase, so that, though the farmer does not thrive, he can live, while others must thrive to live.

Does not this view, and is it not a correct one, place the farmer at the foundation of our material wealth? And is it not true that the enterprise, upon which all others depend, contributes most largely to a given end? Who but the farmer feeds the thousands pouring in upon us from foreign shores? And they not only do this, but export to those that remain at home. We hear much about our growth and increase of wealth, as a people, and would ask to what one class do we owe this so much as to the men who have opened up these broad and rich prairies to cultivation, and whose sons, in many instances, are now engaged in the same work further West. True, a people properly situated might acquire wealth by the pursuit of other industries, and import their food, but we are not speaking of what might have been with us, rather, what *has been* and *is*, and claim that the very length and breadth of our great land makes agriculture the basis upon which other industries must build. But to enhance the real prosperity of our nation, a class must be some more than the producers of wealth, they must be both intelligent and upright for two reasons—they form a part of the whole, and being this in character, will directly influence the remainder. One means of applying this test, as to intelligence, is to inquire how much the farmers have improved their own condition? What our progress has been, as a nation, in the art of agriculture?

The answer is so apparent, and yet comprises so much, that it seems both needless, and difficult to frame it in words. We may with pride, however, make a comprehensive statement that farming and especially dairying, is rapidly being reduced to a science, having its publications, and holding its conventions, of which the present state gathering is a notable illustiation. Take as another the American Institute at New York City, which next Nov. holds its fifth annual fair, where, it is said, "one can note the progress of the age, especially in all that facilitates the work pf the farmer." Connected with this is a farmers' club, which meets weekly for the discussion of its interests. This Institute has 2,000 members, occupies buildings covering forty city lots, posseses a valuable library of nearly 11,000 volumes chiefly on agriculture, chemistry, and industrial art, and is soon to have an international fair. National and state dairymen's conventions have taken their places among the first of those in our land, both in point of interest and importance.

It would be impossible to enumerate in detail the improvements in farming and dairying utensils during the last fifty years, and perhaps this is more particularly marked, both of utensils and their use, in the latter, brought about by combinations in the manufacture of butter and cheese. Truly the old-fashioned cheese-press, and the churn with the boy or girl to work its dasher two or three hours over a hard churning, have passed away. All this lays the nation under tribute to the farmers, and now let us apply another test, by which we may ascertain how its prosperity has been promoted by them, in direct service. When we pass into review the early history of the American people, we find that though poor financially, they were rich in men and women of rare intelligence, and those sterling qualities so essential to the success of any government, and especially a republic. Had one the time and ability to recall, and present before your honorable body the details of our past history, undoubtedly it would be seen that no one class, more if so much, abounde in these, as did the farmers. The hardy soil of New England gave us men, if not money, and at a time too, when men were most needed. A glance along up to the present time will show this has ever been true of the soil of our country.

Mrs. Harriet Beecher Stowe has well said "America is above all other things an agricultural country, and her aristocracy, whether of talent or wealth, generally trace back their origin to a farm." By referring to her book "Men of Our Times" we shall find this illustrated in the parentage of some of our greatest aud best men. Our beloved Lincoln was the son of a poor farmer, and "at seven years of agė was set to work, ax in hand, to clear up a farm in a Western forest.. Until seventeen his life was that of a simple laborer, with probably not more than six months' schooling in his whole life. At nineteen he made his trip to New Orleans as a hired hand on a flat-boat, and on his return split the timber for a log cabin, and built it, and enclosed ten acres of land with a rail fence of his own handiwork." Of Salmon P. Chase, it is said, "his parents were of the best class of New England farmers. Bible-reading, thoughtful, shrewd, closely and wisely economical." Literary material was so scarce in that region that his first writing lessons were taken on strips of birch bark. His father died when he was young, leaving his mother with little property except a small estate of her own. She was of Scotch blood, at once "shrewd, pious, courageous and energetic," belonging to that class of New England mothers, whose chief aim "toward which they set their faces as a flint," was to give their sons a college education, and who accomplished it by "infinite savings, and unknown economies." At fourteen he went to live with an uncle, where he remained two years, working on a small farm "just as hard as he could." After graduating from Dartmouth college, being penniless, he was offered fifty cents by his uncle, the senator, with which to buy a spade to begin with, for then, said he, "you might hope to come to something." Such training, says Mrs. Stowe, gave us a secretary of the treasury, and chief justice of the United States. Henry Wilson, United States senator and vice president, was born at Farmington, N. H., of very poor parents, and at ten, bound to a farmer till twenty-one. Says the writer, here he had the usual lot of a farm boy—plain, abundant food, coarse clothing, incessant work, and a few weeks of schooling at the district school in Winter. In these eleven years, by twilight, firelight, and on Sundays, he read over one thousand volumes of history, geography, biography, and general literature, borrowed from libraries, and individuals. Horace Greely was born at his fathers' farm, Amherst, N. H. In boyhood he was fully occupied with his hard work on the farm, and his father, in spite of honest industry, became bankrupt when Horace was nine years old. At fifteen he procurred a situation in a printing office. William A. Buckingham, eight years governor of Connecticut, taking her through the war, was the son of a thrifty farmer, a deacon in the church. Of his mother it is said one of her daily household sayings to her children was "Whatever else you are I want you to be christians." In the region where she lived her memory is cherished by all, in the records of good words and deeds. The education of this man, it is affirmed, was a striking specimen of New England, based first on the soil, in the habits and associations of a large and well-conducted farm. At twenty he left home, and entered a dry goods store as clerk, doing the last three years on the farm as much work as any of his father's hired hands. Daniel Webster's father was a small farmer, living in the wilderness, and, it is said. "but for a system of education, which pushed the means of instruction into remote solitudes, would never have been neard from in public life." Our poet, J. G. Whitter, was the son of a farmer, and worked on the farm till eighteen years of age, and to crown all, the president elect of these United States, James A. Garfield, is to-day a farmer, living on his farm—a home thus described by an eye-witness: "The house is quite a large wooden one, not at all elegant, but the whole place, barns and all, is the residence of a well-todo farmer in appearance."

These men, and many more we might mention from the same class, represent not only intellect, but integrity, and uprightness—many, if not all, christianity.

Upon these principles is our nation founded, and upon these alone can it be perpetuated. Men representing these have laid the ground work of this republic, and all parents should feel the responsibility of so training their children as to take up, and carry forward, the work thus begun. The future of this country rests with them, and it is fortunate for us that the farm far surpasses the city in its facilities for training them to habits of industry and morality. The boys on our farms are not surrounded by saloons and gambling dens—they can walk forth, and breath God's free air without inhaling moral poison at every turn. The very air of the country not only invigorates the body, but lifts the mind and heart to God, the Creator, provided man will look about him, and allow nature to have its course. Ask the philanthropic men of our large cities, why, at such an outlay of time and money, they send the poor children out by carloads into the country for one day only each year? They tell you, that one day among the farmers leaves its impress on these children, physically and morally, the whole year. Blessed then, are they whose home, that type of heaven, is here. I can testify from personal experience that the memories of the farm and home where I was reared grow dearer and more vivid as I grow older—they must be as much deeper and broader than those that cluster around a city home, as the one is broader than the other. The home, barns, orchard, garden, woods, brook, hill and hollow, all pass before ones mind, and carry them back to childhood with its pleasures, and wholesome, (though sometimes irksome) toil. We see that all the men to whom reference has been made, were hard-working farm boys, and in most cases it would not be more detrimental to bring up children without education, than without work. Habits of industry are a great safe-guard against temptation, and the farm furnishes employment for the boys, whereas in a city home it is difficult to find enough for them to do, to keep them out of the hands of him who employs the idle. Couple this fact with the absence of places of vice into which young men may be lured, and we see the great advantage the farm possesses in training children.

The disadvantages are rapidly vanishing in that farmers are becoming able to place in their homes, books, paintings, music, and many other attractions, which are refining and elevating in their tendencies, and the effects of which are being seen in the sons and daughters of the present time. But the indebtedness is not all on one side—the farms is as much benefited by the boy, as the boy by the farm; and that this valuable appendage may be properly appreciated, we would commend to parents the perusal of the sound, though somewhat humorous words of Charles Dudley Warner, entitled "A Boy on a Farm," who gives it as his opinion, that a farm without a boy would soon come to grief, closing with these words, "and yet I doubt if any boy ever amounted to anythtng in the world, or was of much use as a man, who did not enjoy the advantages of a liberal education in the way of chores." Permit me to recommend to your notice the appreciation. as well, the chore girl on the farm, who sometimes fills the place of both in that unfortunate family where the boy is wanting. Would that every father and mother in our rural districts might feel, as in the past, so in the future, the weal or woe of an nation must largely depend upon what the sons and daughters of farmers are trained to do and be, and excise their parental care and authority accordingly. It is plain that to these we must look for an influence which shall counteract that of the extravagant, the idle, and the vicious, with whom the large cities abound. Does it not seem that we carry within, the elements of our own destruction in the habits of life, and sects, whose authority is paramount to the national, unless the former can be corrected, or overbalanced and the latter properly restricted. Combine with this view, the statement of our consul at Zurich, Switzerland, that among the thousands landing daily upon our shores are many paupers and criminals, shipped on condition they never return to their native land, and soon possessing here the same power in the ballott that any American born citizen exercises with so much just pride, and we have some of the dangers which threaten our national life. With this outlook, briefly and imperfectly drawn, we appeal to you, Mr. President, and gentlemen of the convention, here assembled, to use your influence, and votes in such a way as to promote sobriety, industry, honesty, and all the principles of right and justice upon which our nation is founded, that we may continue to be what we now are—a prosperous, intelligent, christian republic.

PROF. PRATT, of Chicago, author of a work on "Food Adulterations," delivered a short lecture on that subject.

[No minutes were taken of Prof. Pratt's lecture, he promising to forward the manuscript to the secretary, but after waiting until Feb. 1, and not getting it, the report was sent to press without it.—SEC.]

JULES LOMBARD, of Chicago, being present, some one suggested that he favor the audience with a song. After being requested by the president, he came forward and sang "O Are Ye Sleeping Maggie." This pleased the audience so well that he was recalled, and sang America, the audience joining in the chorus.

Adjourned until 9 a. m. Friday morning.

FRIDAY MORNING'S SESSION.

The convention was called to order soon after 9 and business was immediately taken up.

The report of the secretary was read and placed on file.

SECRETARY'S REPORT.

DR.	
To R. M. Patrick	$55.25
" Advertising	17.00
" Dr. Tefft	18 75
" Membership Fees	3.00
	$94.00
CR.	
By Printing Broceedings	87.00
" Postage	4 00
" Stationery	3.00
" Programmes and R. R. Checks	4.50
" Telegrammes	1.00
	$99.50
Dr. Balance Due Sec	$5.50

U. OF I. URBANA-CHAMPAIGN

TREASURER'S REPORT.

R. M. Patrick, treasurer, In account with Illinois State Dairymen's Association:

1880.	Dr.	
March 8.	To Cash of Dr. Tefft fcr Memberships	$24.50
Dec. 12.	" " Rec. from 56 Members	56.00
" 17.	" " Donated	1.50
1881.		
Jan. 20.	" " Rec. Dr. Tefft from 20 members	20.00
		$102.00
1880.	Cr.	
March 8.	By Paying Anderson Bal. Printing	$18.75
Dec. 17.	" " Dr. Pratt Lecture	10.00
	" " Balance Hall Expenses	7.00
1881.		
Jan. 27.	" Balance in Treasury	66.25
		$102.00

G. P. Lord then offered the following resolutions which were unanimously adopted:

Whereas, The adulteration of human food has become a great evil in our country, and is now being carried on to an extent not only of endangering our manufacturing industries by destroying the confidence of the community in our manufactured products, but also to endanger the prosperity of those who have been largely engaged in the business of adulterating human food, by reason of new and more dangerous and obnoxious forms of adulteration, thereby jeopardizing the lives and health of our people, therefore,

Resolved, That the adulteration of any article of human food or drink, or of drugs intended for human use, meets with the hearty disapproval and condemnation of this Association.

Resolved, That it is the duty of this Association, and of all our Boards of Trades, and also of all our Municipal Boards, and Boards of Health, to take such united and persistent action on the subject of adulteration as will effectually stamp out the evil and prevent the sale of adulterated food and drugs in all our communities.

Resolved, That it is the duty of the State and General

Governments, to enact such laws as shall prevent the adulteration and sale of all articles of human food and drinks and drugs, in all the states and communities of our country, and their transportation from one state to another.

Resolved, That the Legislative Committee appointed by this Association be requested and instructed to take prompt action to bring this matter of the adulteration of articles designed for food and drink, and drugs, before our Legislature at an early day, and by all means in their power endeavor to secure the passage of such laws as shall effectually prevent the sale of adulterated articles of food, or drink, or drugs, in this State, otherwise than with full notice of their character.

Resolved, That this Legislative Committee be requested to take prompt action to bring this question of the adulteration of articles of human food, and drink, and drugs, before the Congress of these United States, and endeavor to secure the passage of such laws by the General Government as will free this country from the evils of adulteration.

Resolved, That the bill for the incorporation of the Illinois Dairymen's Association, passed by the Senate and favorably recommended by two committees of the House of Representatives, at the last session of the legislature, should become a law without further delay, and that such state recognition of this constantly-growing industry is alike due to its importance and the great additions it has already made to our taxable wealth, as well as to the state at large, which is entitled to the benefit of the investigations, and experiences of this Association, while it should liberally aid the further prosecution of its labors.

After the names of the members who had paid their fee had been read, a motion was made by W. W. Bingham that the next annual meeting of the association be held at Dundee, commencing Wednesday, December 14, 1881. This was carried.

R. M. PATRICK: Said some method should be adopted whereby we could have a larger membership.

McLEAN: Remarked jokingly, that the reason Elgin people did not become members was that they already knew enough about the business.

R. M. PATRICK: Moved that a committee of five be appointed to solicit members. This was carried, and H. C. Edwards, Dundee, R. M. Patrick, Marengo, C. C. Buell, Rock Falls, O. S. Cohoon, Belvidere, Luther Bartlett, Bartlett, were appointed as such committee. The committee was instructed to appoint sub-committees in all of the counties interested in the dairy industry, to canvass.

It was suggested that the membership fee be reduced one-half to those who had not received the benefit of the meeting. This was objected to by many. Dr. Tefft thought it would be using those who had already paid full price, unjustly. The trouble was, he said, our members did not take the interest they should in the association. In the Iowa association, where they have over 600 members, eaeh member makes it his business to solicit aid for the organization. After considerable talk on both sides of the question it was decided not to change the amount of membership fee.

The committee on nominations were called upon for their report. The chairman, S. W. Kingsley, then read the following report which was, on motion, adopted:

For president, Dr. Joseph Tefft, Elgin; secretary, R. P. McGlincy, Elgin; treasurer, R. M. Patrick, Marengo; vice-president, C. C. Buell, Rock Falls, *W. M. Patton, Sandwich, S. W. Kingsley, Barrington, E. H. Seward, Marengo, J. R. McLean, Elgin, Israel Boies, Davis Junction, †Luther Bartlett, Bartlett, *Prof. F. H. Hall, Sugar Grove, I. H. Wanzer, Oneida, *Charles Boone, Winnebago, *John Smallwood, Freeport, L. B. Parsons, Flora, *W. H. Stewart, Woodstock, H. W. Mead, Hebron, N. Eldred, Gilman.

* No response. † Declined.

The secretary was instructed to notify the vice-presidents of their election, and request them to remit their fee of $1. Those failing to respond would have their names omitted from the roll of officers and the list of members.

A resolution tendering a vote of thanks to the people of Marengo for their uniformly kind treatment of members from abroad, was offered by R. P. McGlincy and unanimously adopted.

C. H. LARKIN: Then offered a resolution thanking Mesdames Bosworth and Crosby, of Elgin, and Prof. Powell, of Chicago, for their able efforts to entertain the association.

After some unimportant talk on various subjects, a motion was made by G. P. Lord that the association adjourn to meet at Dundee, Wednesday, Dec. 14, 1881. Carried.

UNIV. OF ILL. URBANA-CHAMPAIGN

PROCEEDINGS

OF THE

AGRICULTURAL
EXPERIMENT STATION.
JAN - [illegible]
UNIVERSITY OF ILLINOIS.

ILLINOIS STATE DAIRYMEN'S ASSOCIATION,

AT ITS

Eighth Annual Meeting,

HELD AT

DUNDEE, ILLINOIS, DECEMBER 14, 15, 16, 1881.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

R. P. McGLINCY, Secretary.

The Ninth Annual Meeting will be held at Sterling, Ills., December 13, 14, 15, 1882.

ELGIN, ILL.:
Advocate Publishing and Binding House.
1882.

STANDARD QUANTITY AND QUALITY OF MILK.

Quantity.—Borden's standard—of eight and five-eighths pounds per gallon—is now taken and accepted as the standard for milk, not only in our own country, but in all Europe.

Quality.—The executive committees of the State Dairymen's Association, after many experiments carefully made, have decided that hereafter the following shall be considered by them as the standard quality of milk in Illinois: Water, 87.5 ; solid, 12.5—in a scale of 100 parts.

LIBRARY U. OF I. URBANA-CHAMPAIGN

OFFICERS FOR 1882.

PRESIDENT,
DR. JOSEPH TEFFT, ELGIN, ILL.

SECRETARY,
R. P. McGLINCY, ELGIN, ILL.

TREASURER,
R. M. PATRICK, MARENGO, ILL.

VICE-PRESIDENTS,
C. C. BUELL, Rock Falls, Illinois.
S. W. KINGSLEY, Barrington, Illinois.
S. K. BARTHOLOMEW, Marengo, Illinois.
C. H. LARKIN, Elgin, Illinois.
ISRAEL BOIES, Genoa, Illinois.
H. C. EDWARDS, Dundee, Illinois.
I. H. WANZER, Elgin, Illinois.
L. B. PARSONS, Flora, Illinois.
H. W. MEADE, Hebron, Illinois.

The ninth and next annual meeting will be held at Sterling, Illinois, December 13, 14 and 15, 1882.

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LIST OF MEMBERS.

Adams, D. C., Dundee, Ill.
Adams, Guy, Elgin, Ill.
Barclay, D. F., Elgin, Ill.
Bartholomew, S. K., Marengo, Ill.
Baker, B. P. & C. E., Chicago, Ill.
Beckley, L., Nunda, Ill.
Broomell, J. H., North Aurora, Ill.
Bosworth, I. C., Elgin, Ill.
Buell, C. C., Rock Falls, Ill.
Boyd, John, 199 Lake St., Chicago, Ill.
Boies, Israel, Genoa, Ill.
Baker, T. H., Davis Junction, Ill.
Batt, Fred J., Dundee, Ill.
Borden, J. M., Dundee, Ill.
Butler, Chas., Elgin, Ill.
Cox, Benj., Elgin, Ill.
Cohoon, O. S., Belvidere, Ill.
Church, M. K., Barrington, Ill.
Crichton, James, Dundee, Ill.
Cochrain, John, Dundee, Ill.
Duff, A., Dundee, Ill.
Demeen, John, Dundee, Ill.
Dempster, George, Dundee, Ill.
Edwards, H. C., Dundee, Ill.
Evans, James, Dundee, Ill.
Farrell, T., Hampshire, Ill.
Fisher, Alfred, Dundee, Ill.
Farr, S. M., Union, Ill.
Gage, J. H., Holstein, Ill.
Giddings, George, Dundee, Ill.
Gilbert, J. B., Sterling, Ill.
Gould, C. W., Elgin, Ill.
Hawley, E. C., Dundee, Ill.
Hill, Wm. & Son, Prophetstown, Ill.
Hammond, D. S., Elgin, Ill.
Haeger, D. H., Dundee, Ill.
Hanley, A. H., McHenry, Ill.
Hodgess, James, Dundee, Ill.
Hull, Edgar, Dundee, Ill.
Jencks, D. S., Dundee, Ill.
Jackson, S. C., Dundee, Ill.
Kilbourne, C. S., Elgin, Ill.
Ketchum, E. G., Dundee, Ill.
Kingsley, S. W., Dundee, Ill.
Lord, G. P., Elgin, Ill.
Larkin, C. H., Elgin, Ill.
LaRue, Geo. W., Port Byron, Ill.
Lawrence, O. F., Elgin, Ill.
Libby, E. H., *Farmer's Review*, Chicago.
McGlincy, R. P., Elgin, Ill.
McNeil, Wm., Prophetstown, Ill.
Morse, Ed., Dundee, Ill.
McAllister, O. S., Hampshire, Ill.
Marshall, Geo., Dundee, Ill.
Norton, W. W., Dundee, Ill.
Nelson, E. H., Barrington, Ill.
Oatman, E. J., Dundee, Ill.
Pratt, Dr. W. A., Elgin, Ill.
Perry, O., Dundee, Ill.
Patrick, R. M., Marengo, Ill.
Rohl, Fred, Dundee, Ill.
Sutfin, D. W., Dundee, Ill.
Steinberg, Fred, Dundee, Ill.
Sawyer, Geo. E., Carpentersville, Ill.
Sutfin, D. Sr., Dundee, Ill.
Smith, J. R., Dundee, Ill.
Schroder, Fred, Dundee, Ill.
Sandy, C. S., Carpentersville, Ill.
Tefft, Dr. J., Elgin, Ill.
Todd, Hugh, Elgin, Ill.
Thompson, A., Harmony, Ill.
Torrence, H. G., Dundee, Ill.
Town, M. C., Elgin, Ill.
Thompson, M. H., Elgin, Ill.
Wardlow, John, Dundee, Ill.
Wilber, C. H., Stillman Valley, Ill.
Wood, Chas. E., Dundee, Ill.
Waterman, Wm. G., Barrington, Ill.
Waterman, Geo. W., Barrington, Ill.
Wanzer, I. H., Elgin, Ill.
Weld, O. B., Elgin, Ill.
Wardlow, S., Dundee, Ill.
Wilcox, S., Elgin, Ill.
Weed, E., Hampshire, Ill.
Went, Henry, Dundee, Ill.
Westerman, John, Dundee, Ill.
Wright, F. W., Elgin, Ill.
Weld, S. E., Elgin, Ill.

TRANSACTIONS.

The Association was called to order at 11 a. m. on Wednesday, Dec. 14, 1881, by the President, Dr. Joseph Tefft, when on motion an adjournment was had until after dinner.

AFTERNOON.

The Association was called to order at 1:30. and the President introduced Hon. W. W. Norton, of Dundee, who delivered an address of welcome, so hearty, and cordial, that all felt at home at once. During his remarks he alluded to the growth and importance of the industry they represented, and the necessity of care in all their work.

J. H. Broomell, of North Aurora, responded, on behalf of the association, and accepted the generous welcome so heartily offered. The President then delivered his annual address.

ANNUAL ADDRESS OF PRESIDENT DR. JOSEPH TEFFT.

Fellow Citizens, Members of the Illinois Dairymen's Association,—Ladies and Gentlemen,—We meet here to-day in accordance with a preconcieved idea for the purpose of spending a few hours n social communion and mental improvement. I trust you will bear with me if I spend a few moments in glancing at the early history of this old section of our state. I say old in contradistinction to a prevailing opinion which has been universally recieved that our lands have only recently been raised from the ocean bed.

Prof. Agassiz informed us years ago that in his opinion the first-born land in the known world was on the American Continent.

This was contained in one unbroken stretch or line from Nova Sco-ia to the Far West. If you please, draw two lines on your map, the upper one running from the mouth of the St. Lawrence westward nearly to St. Paul on the Mississippi, and the lower one from the neighborhood of St. Johns, in Newfoundland, running southwesterly about o the point where the Wisconsin joins the Mississippi, but jutting down to form an extensive peninsula comprising part of the States of ndiana and Illinois, and you include between them all of the United States which existed at the close of the Devonion period.

Now if Prof. Agassiz was correct in the foregoing (of which we have but little doubt,) we are standing here to-day on a portion o the first land ever raised above the ocean wave. Be this as it may, we find plenty of evidence to show beyond a doubt, that this vicinity has been the home of what was once a great nation.

A people who were versed in the arts, which in part or whole are lost to us, or only known by the relics found here and there in the copper mines of Lake Superior, or in the mounds erected by them, and perhaps elsewhere. These people inhabited this country and undoubtedly tilled the soil hundreds of years, yea, many thousands of years ago.

It is believed by many that they had a hand in removing the timbe from the lands and thereby laying the foundation of our great prairies

The presumption is, that this occured long before the red man was allowed to roam over the prairie state. The Indians found here by the present generation have no traditional history of any race o people living here before them, other than those mentioned below.

They found the mounds here when they took possession of the country. After years of toil and endurance for some cause to us unknown, these inhabitants abandoned their homes, or were exterminated. Subsequent to this the soil remained a wild waste or in othe words, all written accounts in regard to it are virtually unknown to history. In process of time the territory was overrun by the Illinois tribe of Indians, who were a powerful nation, and commited many aggressions on the neighboring tribes, and finally waged war on them unti endurance was no longer considered a virtue. About this time an alliance was formed by six of the adjacent nations or tribes who combined to exterminate the troublesome Illinois. This being done the country contiguous to the Fox River, by conquest fell into the hands of the Pottowatomie Nation, who held it and cultivated only here and there a garden spot.

The large production of vegetable matter raised from year to yea was burned and went back to the soil in the form of ash and potash In this situation the early settlers of this section found the soil forty o fifty years ago. It was at that time in a ripe condition to produc large crops of the various cereals.

The wheat raised at that time was large and plump in kernel, and not unfrequently yielded on an average from twenty to forty bushels per acre, and sometimes even more than this amount was gathered.

Many of the early farmers conceived the idea that the soil was s rich in the elements of production that it never could be exhausted At least their actions would seem to indicate that this was the fact, a we found many who was always borrowing from mother earth withou the least attempt to pay. The result of this practice was that within quarter of a century wheat ceased to be a profitable crop to grow The berry had become small or shriveled, and the average productio was only about ten bushels to the acre. Corn continued to produce fair yield but the price was so low that it hardly paid for threshin and marketing.

The same could be said of oats and other small grain. Then cam the query what should be done? About this time a company wa organized in Chicago to build a railway from that city to Galena

This rail road reached Elgin in the winter of 1849-50 and in the pring of the last named year a farmer from Orange County, New York, onceived the idea of sending milk to Chicago by rail. He immediately ommenced the undertaking. To him is the credit not only due for pening up the milk trade of this section, but also that of originating the irst can ever made west of the great lakes for the transportation of nilk. The same form and size of can is now in universal use in his state, as well as in many of the other western states. Little lid we think when we saw that one can of milk which was being rundled down to the depot in that old ox cart, what a river of milk vas being tapped in this vicinity, and that it would so soon develop to such mammoth dimentions.

Think you of the thirty years ago when some of our farmers at east were on the great cereal road to financial ruin. Many there were vho were unable to squarely bring the year round, and not a few had ncumbered their farms.

At this juncture the mother of the Bovine family of animals put in her ppearance as a God send. She with her fine lacteal flow has furnished e means to raise the mortgages, to erect fine buildings in the place of ose old dilapidated ones of by gone years. She has also produced n essential factor in the enrichment of the farm soil. We are of the pinion that the farms in the dairy districts of this state, have largely creased in intrinsic value by the amount of animal deposits which ey have received from time to time by the present mode of farming.

Cato, the Censor, who lived and flourished over two thousand years go being asked the best method of enriching a country answered y feeding cattle. We think we have good reason for believing ere is not a dairyman in Northern Illinois, who has ever given this ubject a thought but will admit the soundness of Cato's opinion.

One need not go outside of the farm field to be fully satisfied that e section of our state where dairies have been successfully operated r the last few years that the farm lands are in far better condition produce a valuable crop of nearly or quite all the cereal grains an they were twenty-five or thirty years ago.

Look at our corn, compare the soundness of the kernel with that ised on lands where the soil has not been quickened by animal eposits, and we are led to believe the most casual observer, will be onvinced of the benefit of stock for the farm, other than solely that f making milk.

If this be so then in figuring up our profits or loss we should take to account the increased productive value of the soil.

It is a well settled fact that some kinds of crops exhaust the soil ery much more than others. For the purpose of inviting your atten- on more thoroughly to this subject we have appended a few com- arisons. Suppose we take two acres of dried timothy hay allowing ½ tons per acre we have three tons or 6,000 pounds, the ash of hich would be 317.16. pounds. We next take the same number of res, tons and pounds, of dried red clover, the ash of which would be 8.68. pounds.

Then two acres of the berry of wheat allowing 25 bnshels to the re which would give us 3,000. pounds, the ash of which would be

35.30. pounds, then the straw of the same, estimated at 1½ tons per acre would give us 6,000. pounds, the ash of which would be 211,08. pounds, and lastly we give a cow the products of two acres to sustain her for the year and take from her 5,000. pounds of milk, the ash of which would be about 30.50. pounds. Now let us spend a few moments in looking at the component parts of the ash as above, that we may form some idea of what each of the five different kinds contain, and the amount of the same. In so doing you will please allow us to recapitulate a little.

	Dry Timothy Hay, 6(00 lbs. Ash, 317.16 lbs.	Dry Red Clover Hay 6,000 lbs. Ash, 448.68 lbs.	Wheat Berry, 3,000 lbs. Ash, 35.30 lbs.	Wheat Straw 6,000 lbs. Ash, 211.08 lbs.
	Pounds.	Pounds.	Pounds.	Pounds.
Potash	52.86	59.85	6.74	1.20
Soda	23.64	31.74	7.20	1.74
Lime	44.04	166.80	2.88	14.40
Magnesia	5.40	19.98	2.70	1.92
Alumina—traces of Iron	1.86	0.84	0.78	5.40
Silica	166.32	21.66	12.00	172.20
Sulphuric Acid	21.'8	26.82	1.50	2 22
Phosphoric Acid	1.50	39.42	1.20	10.20
Chlorine	0.36	21.72	0.30	1.80
Totals	317.16	448.68	35.30	211.08
			2	70.60
			70.60	281.68

5,000 pounds of milk gave 30.50 lbs of Ash, composed of—

Phosphate of Lime	15.49 Pounds.
Magnesia	2.88 "
Per Oxide Iron	0.31 "
Chloride of Potassium	8.27 "
" " Sodium	1.53 "
Free Soda	2.02 "
Total Ash	30 50

We see by the foregoing figures that a ton of timothy hay takes from the soil in solid matter 105.72 pounds. One ton of clover 149.5 lbs One ton of the berry of wheat 23.53; the same of wheat-straw 70.36. One ton of wheat and straw together 93.89, and one ton of milk 12.20. lbs. this is exclusive of gasses removed in each case.

If these figures are correct, can we doubt which kind of farming i best, so far as keeping up and in good condition the farm lands?

The question has often been asked if the West is not likely t over do the dairy business. You will please let us look at this question, as it is one of much importance to the dairymen of Illinois. I the first place we will cast our eye back to the decade prior t 1850, when but little butter was made for sale in Northern Illinois and when that little brought from eight to ten cents per pound on a average. This was at the time when it took only a dozen tubs to glu the great Chicago market.

It has been hinted that the butter made at the time mentioned abov was of inferior quality and consequently had to be sold low. Whil some might have been, we are quite sure that all was not so.

A visit made by us to Chicago at a time with a friend who ha about a dozen tubs for sale, and who after spending hours in trying to sell his butter finally found a hotel keeper who offered him 12½ cts. per pound, provided he would take his note due a few months hence, saying at the same time the butter was too good to be profitable for him to purchase as his guests would eat twice as much of it as they would of eight cent butter. How with cheese? About this time we had a few hundred pounds of full cream cheese made on our farm for sale, for which we were offered all the way from five to seven cents per pound for it by Chicago buyers. We finally bartered it off for eight cents a pound. Last week we paid eighteen cents a pound for cheese in Elgin not as good as that we sold thirty-five years ago for eight cents.

Creamery butter sold last week on the Elgin Board of Trade for 43 cts. a pound.

Does this show the dairy business as over done in this vicinity at the present time? We think not.

The increase of the population in the United States for the last decade has been 11,230,185. Now give 14 pounds of butter to each, the amount computed as used per capita in this country, and we would require an additional make of over 157,000,000 pounds for home consumption alone, over the make for home use in 1870.

The acquisitiveness of some, yea many of our American people, have induced not a few to commit various grave errors in the form of adulteration of the various kinds of food for human consumption, and amongst the many, perhaps none have suffered more than that of the dairy.

This has had, and is having an injurious effect on our exportation of dairy products. How long this thing will be allowed to exist no one knows.

Perhaps there is no country in the civilized world where adulteration is carried on to such prefection as in the United States.

A careful observer can but notice the result of this on the physical and mental condition of our people. Who is there, or where can we find a person that has lived to see a score of years, who is perfectly sound in health and mind? Look at our asylums and see the fearful increase of mental disease there, and then quietly ask yourselves how much of this is the work of adulteration of our food.

The largest exportation of our own dairy products is to England. Mexico draws her supplies of this product almost solely through that source; although only divided from us by a comparativly small river. Such has been our commercial relations with her that but very little if any of our dairy goods have reached her markets direct. The prospect now appears favorable for a railway connection with the City of Mexico in the near future, which may result largely to the benefit of the dairymen of this country. Some of the South American States import butter and cheese, not directly however from this country, but through our English cousins on the other side of the great Salt Pond.

By suitable exertions on our part could we not reach that trade direct and thereby benefit the dairymen of the United States?

In taking a careful survey of the dairy and its connections we are constrained to repeat what we have often said before, that we firmly believe the factorymen commit an error in not stamping their packages with their names, place of business and quality of their goods.

If this was universally done the purchaser could step up and purchase his supplies with much confidence.

It does not appear reasonable that the manufacturers would suffer by so doing if they put upon the market an honest article. No man should follow for a moment a profession or calling where honest dealing will not give him ample support. He owes this to himself, to his fellow man, and to the world at large.

The Chair appointed the following Committees:—ON NOMINATIONS—S. W. Kingsley, A. Thompson, O. S. Cohoon—ON FINANCE—E. C. Hawley, E. J. Oatman, Chas. E. Wood, Mesdames H. C. Edwards, D. C. Adams, and George Giddings. ON OBITUARY—J. H. Broomell, C. H. Larkin, H. C. Edwards.

THE COW IS QUEEN AND HER PRODUCTION IS KING.

BY O. S. COHOON, OF BELVIDERE.

Ladies and Gentlemen:—I do not expect to prove to you that the cow is Queen and her production is King, entirely by statistics alone. Neither in a commercial view of the matter alone. But by various methods such as her moral power to the human family. Her financial betterments to the human family, and to the farm; and by the farm where her production reaches to an immense value.

A very few years ago, it was said that cotton was King and it seemed that possibly it might have had that kind of a tendency. Because it under took to manage our government, and used immoral efforts to legislate the freedom, and the rights of *liberty*, from a large mass of human beings. And now like all other things, time and death, levels the would be king of tyrany. This King taught no morals. But the cow the queen, and her productions, the king, we propose to show you have given us moral lessons all the way up, from time immemorial.

Let me stop a moment and take you back in your imagination to some remote time in history, or better, only back in the memory of many a father, and mother of this association, and draw a little true picture that has transpired in their time to prove the great moral worth of the cow. Many of you remember a long time ago, when Obadiah was one and twenty years old and came and took Susan Jane (for some unacountable reason) for better or for worse, and emigrated way out West into the State of New York to make a home of their own.

With hardly clothing enough to make moderate weather comfortable, with a small lot of house hold goods, which mother had divided, and possibly an old horse that father could spare, an old ax, and a few little traps that would make life possible when landed in the deep, wild forests of Western New York, or on the far distant prairie in its primitive days. At this juncture Susan Jane and Obadiah with strong hands, take hold of life with energy and zeal and build a little log castle in the forest; and a glass one in their minds for the future. And immediately, if not sooner, a little offspring, a little king or queen upon the throne, puts in its appearance, with more demands than Susan Jane and Obadiah are prepared to pay.

And as a rule there is more to follow, as time rolls briefly along, and soon Obadiah writes home to father, or Susan Jane to mother and says something like this: That they had a little piece of land cleared, a little log house, and a little log barn and enough to feed the old gray horse, and a little to spare. And as Johnny was getting to be a big, nice, fat baby, and if father could just help them to get a nice cow of John Jones that lived down in the settlement, they would be perfectly happy in their new home. Jones would sell them the cow for thirteen dollars and a half. A very nice cow with very long horns and quite tall, with short bushy tail, and Jones says we can have the calf too. And now if father could let us have ten dollars, a year or two, so that they could buy her it would be so nice for baby, (to have some nice warm milk,) Jones will take five cord of wood for the other three dollars and a half and Obadiah says he can get that out soon.

Now picture to yourselves what father and mother would say on receipt of this letter. Obadiah had been a good boy, and had helped clear up the farm, and Susan Jane had been good to wash dishes, and tend the baby and mother says she will sell this jar of butter and box of eggs when she goes down to Bangor and father would have a little left out of the sale of that pig, after paying his taxes, and Obadiah would buy his first cow.

Now ladies, and gentlemen, picture to your self this little story of getting the first cow in a thousand different ways; by the tens of thousands of men and women and think of the many millions of moral worth that there has been in it. There is many a man and woman in this house I have no doubt, but what has seen a thousand times better picture in their experience of life than I have drawn. And Obadiah's cow and calf have grown and increased from a thirteen dollar cow, and eight cent butter, to a fifty dollar cow and forty cent butter, and I believe lives way out west near Dundee Illinois, and belongs to a board of trade at a place they call Elgin. And many of these Obadiahs have their hundreds of cows on the thousand hills round about.

And then came a period that corn was called King, and a very fair King it made too. With its millions of value, it did not teach those lessons of thrift, economy, and increase, that the cow and her progeny bring to the mass of the human family. A very short time ago Frank Leslie's Illustrated paper undertook to prove that grass was King; and when you figure the many uses, and ways that it can be used, and in a financial view there is millions in it, and a very formidable King it makes.

These statistics are a valuable document for study, but would be to long to detail here on this occasion, as I wish to detail to you a very few statistics on the value of the cow and her productions in a commercial way.

The Hon. George B. Loring, United States Commissioner of Agriculture, stated at the National Butter, Cheese and Egg Convention at Cedar Rapids, that there were 12,412,137 milch cows in the United

States in the year 1880, and that there had been an increase of 3,476,805 milch cows in the last ten years, and an increase of 12,057,183 cattle of all kinds in the same period. And the increase of milch cows in the ten Northwestern States has been 63 per cent.

Now Ladies and Gentlemen, think of it. The glorious old cow, the pet of the family has increased in the Northwest in numbers to the amount of 63 per cent in ten years, and the amount of her butter has increased 63 per cent or more and the price of her butter and cheese has increased 50 per cent. in the Northwest. And the increase of all kind of stock, the production of the cow is 100 per cent, making a total of 276 per cent. and I may add, there is millions more in it. The grand old cow has lifted more mortgages, and paid for more farms, from Maine to Oregon, than any one other production ever produced. Ladies and gentlemen, I could enumerate innumerable amounts, wherein the cow is the producer and the king of production.

She is the mother of all of our beef. The improver of infant pigs, and furnishes milk for many infants of the genus homo. And it requires her production to make Oleomargerine. I refrain from enumerating statistics of butter, cheese, condensed milk, sugar of milk, and a hundred culinary purposes which milk makes the cream of living. Now I do want to say, that the cow has turned the tide of our agricultural prosperity, here in Northern Illinois, and many other places, from a downward course in raising grain, to an upward and prosperous one in raising stock, grass and hay. It has been said long ago, that the man who made two blades of grass grow in the place of one, was a benefactor to his race. Now any man that will raise the cow intelligently and continue therein any reasonable length of time, will be that benefactor.

There is millions more in the cow, of which men of larger caliber than myself, will tell you, before you leave this convention, when they give you statistics about the Shorthorns, Herefords, Ayreshire, Jerseys, Holstiens, Devons and possibly the coming cow may come from Iceland or Alaska. Since writing the above, report says that Obadiah's son John, or one of his younger sons was one of the Editors of the Chicago *Tribune* and had forgotten about the pet cow of the family, and wrote the following editorial a few weeks ago, which to me looks like a man up a tree.

THE BUTTER QUESTION.

The speculators in butter allege the drouth of the late summer and early fall as a reason for keeping up the excessive price of their products. But this is a mere pretext. The drouth was followed by a long season of abundant rains. The pastures were again covered with a growth of the richest verdure, and outdoor feeding has already continued on the average five weeks longer than in the season of 1880. The second crop of hay was in many localities better than the first, which was a heavy one, and the price is now tumbling under the influence of the late supplies. The fact is, that the price of butter has been run up and kept up in sympathy with the price of grain, though there is no reason for it based on short supplies. The buttermakers and dealers have been bitten with the mania for speculation just as the vheat growers and dealers have, and they are likely to have as bitter n experience before they get through with their deal. Because corn s a little high and scarce is no reason why butter should be so dear vhen the pastures this fall have been so unusally good. The thing ias been overdone. The dairymen would better think it over.

The subject has a very direct bearing on the movement for the pro-ibition by State and National enactments of the making of counter-eit and adulterated butters. With what grace can the dairymen ask overnment to stop the manufacture of butterine and olemargarine—vhich, though cheap, are alleged to be perfectly wholesome—when he price of pure butter has been advanced beyond all sense or reason? t 40 cents, butter is beyond the reach of the vast majority of the eople living in cities and towns, who can afford to pay no such price. ll the laboring population, mechanics, and the salaried class gener-lly find the present price much too high—more than their incomes varrant paying. They must either stop consumption or use cheaper rades, most of which are mixed or compounded. In this fact will be ound the secret of the vast development of the manufacture of spuri-us butters in the last two years. If genuine butter were, say, 25 ents a pound, the people would very readily detect the spurious, and nany wouldn't touch it at any price who are now compelled by stern ecesity, when they buy their butter, to

Be to its faults a little blind—
Be to its virtues very kind.

The same editor or his associate a short time ago, found the price f corn too high, and created quite a breeze about the same. He also ound the price of his beef steak too high, soon after and then ordered is reporter out to find the cause. The reporter made advances in hat direction, and found the cause to be that it *was so good.* And we vould say that the reason for the present price of butter is that it is o good.

SILOS AND ENSILAGE.

J. H. BROOMELL, NORTH AURORA.

Some thirty years ago a Frenchman by the name of M. Auguste offart, a member of the Central Agricultural Scociety of France, nd a man of wonderful perseverance, commenced a series of careful xperiments looking toward the preservation of green food for stock. is idea was that any food plant taken at the time of its blossoming, ontained its maximum amount of the nutritive elements, and that the reservation of such plants by desiccation or drying, resulted in the ss of a good precentage of the food principle of the plant. To be onvinced of this is only necessary "to cross a meadow at the time vhen the new-mown grass is undergoing desiccation in order to re-ognize that it is losing an enormous quantity of its substance that ex-ales in the air in agreable odors, but which if they remained in the lant, would serve as a condiment, facilitating digestion and assimila-ion." With many failures and at times partial success he at last in 873, came out triumphant in the discovery of a method which prom-es to overturn the whole system of stock-feeding, and which has made his name famous among leading agricultural men in this country and in Europe. J. B. Brown's translation of M. Goffarts writings has become a text-book among ensilage stock feeders.

Goffart built four silos on his farm at Burtin, France in 1852, over twenty nine years ago. They were excavations hollowed in the ground, walled, and plastered with cement, and water tight. He also had his fodder cutters imported from England. He is using them still.

He used these silos during all of his experiments and failures. The fault was not with the silos, but with the method of preparing and storing the ensilage. During twenty years he succeded only in preserving the fodder for a few weeks having to feed it out in great haste to head off putrid fermentation. This was quite unsatisfactory and often left him short of feed. He cut his corn six inches long, often mixing with it a quarter or a third of its weight of short straw. After tramping it down he placed upon it a layer of short straw, and finally a cover of loam well beaten down to make it air tight. During the days following he stopped all fissures which appeared on the surface.

Upon opening the silos he invariably found a cavity between the settled ensilage and the arching loam, Here was an air space which played the mischief with all of his plans. Later he abandoned the loam entirely and substituted a plank covering which descended with the maize as it settled down. This simple change produced a perceptable improvement but it was still far from perfection. Still later, he reduced the mixture of straw, cut his maize three tenths of an inch long and weighted his plank covering with 100 pounds to the square foot and found that his ensilage kept an indefinite length of time.

Here was success after twenty years of failure, . While cutting his corn shorter and reducing the straw to a tenth of the weight of the corn was important changes, he regards the weighting of the covering planks as the very essence of the succesful issue. Since 1873, Goffart has followed the regular filling of his silos at Burtin and has been a great educator of his countrymen in the new process throughout France, and to this may be attributed much of the recent increase of exports of dairy products from that country.

The credit of first introducing the system of ensilaging into the U. S, must be given to Francis Morris, of Oakland Manor, Howard Co., Maryland. His attention was first called to this system by a newspaper which reached him from France in the early part of 1876, our Centenial year. He commenced by raising five acres of drilled and cultivated corn that same year. It was in tassel in the first days of October, at which time he cut it into one inch lengths and packed it into three brick silos inside of his barn. These silos were built after the corn was planted and was each 25 ft. long, 4 ft. wide and 10 ft. deep. The fodder was packed in by tramping, then covered with boards which was weighted with stones. After being thoroughly pressed down, he removed the stones and covered the boards with straw and placed a covering of well packed clay upon the straw with the view of making an air tight covering. This notion of covering with clay must have been imported from France before it had been well established there that the clay was superfluous.

The first silo was opened on Christmas day of 1876, all of the

ows fed from it. He used it as feed for cows, horses, sheep, hogs,
nd mules and they prefer it to the best of hay. Mr. Morris says his
rop for 1877 was not so abundant to the acre as that of the preceding
ear, owing to neglect and dry weather, but the quality was equally
s good and that he fed with it over a thousand head of stock for two
nonths. For the year 1878 he doubled the crop and built and filled a
ery large silo out of doors, besides filling the three silos in the barn.
ince 1878 Mr. Morris has increased his silo capacity to 1,000 tons
vhich shows conclusivly that he is well satisfied with ensilage as feed
or his stock. He speaks as follows—"I have a very large herd of
tock dependent on the corn fodder for their winter feed and I feel
onfident that they will furnish me with all the provender I require.

In a long experience in raising stock I have found corn fodder
reserved in silos the best feed for milking cows that I have ever
sed. It is equal, if not superior, to June grass, and its cultivation is
o easy, its preservation so inexpensive, that to-day no one can esti-
nate its advantage to the agriculturist."

Mr. Morris is still using it with success and is, year by year,
aising the productive value of his lands by the application of the
rge amount of manure made by this system ; can now get 40 bush-
ls of wheat to the acre from land that would formerly yield but ten
ushels.

It is a matter of interest to note that while Francis Morris, as a
isciple of Goffart, was developing the system of ensilaging corn on
is farm in Maryland, C. W. Mills, of Pompton, Passaic Co., New
ersey, was working out the same idea, without having heard of
orris or Goffart. Mr. Mills is a grain merchant of New York, of
igh standing, familiar with all kinds of wheat and corn, had been
ruck with the luxuriant character of some species of the Southern
orn. He determined to experiment with it on his farm at Pompton.
aving selected his seed he planted it among his ordinary New Jersey
orn, alternating the rows of the kinds with the object of improving
is Northern variety by hybridizing it with the Southern. When
eptember came his native corn was ripe, ears all formed but the
outhern corn was still unripe. If the frost came it would be wasted,
nd what to do to save it for feed was the question, to be solved and
hich Mr. Mills at once set about trying to do. He remembered the
ld method of keeping roots in mounds of earth, practiced from time
nmemorial. Pits were dug in dry gravely soil; the tall corn was cut
own and packed in board foundations in these pits. When filled a
oard roof was placed upon the corn, and the whole covered with
rth.

When the time came to try this food on cattle it was found to be
fair order. The stock ate of it greedily, but still the plan was but
artially succesful, owing to portions of it being mouldy, and as the
its were disturbed, the process of decay went on rapidly. This ex-
eriment was the key which seemed to unlock the great secret of pre-
rving food in the silo.

This was in the atumn of 1875. Nothing was done with it in
76, but Mr. Mills set about thinking it all over and devised his pres-
nt system of preservation by the exclusion of the air by pressure

only. In 1877 he made a complete success of it after the exact plan of Goffart, omitting the mixture of cut straw which the latter used as late as 1876.

It seems strange that two men so far apart should both hit upon the same thing at about the same date, and yet we have the statement of Mr. Mills that he had not heard of Goffart or Morris when he built his first two silos in 1877. These were each 40 ft. long, 13 ft. wide and 20 ft. deep, and located under the floor of his barn and constructed of masonry and plastered with cement, with a plank casing on the top of the walls and with proper pressure these silos will hold 600 tons of ensilaged corn. A year ago this winter he had them filled from the produce of 13 acres of ground. The complete cost of these silos was $700. or $1.16 for each tons capacity. The cost of seed, planting, tilling, harvesting and putting into the silos ready for feeding was something less than $500. The capital being $700, the interest at 6 percent would be $42, and allowing 20 per cent for repairs of silo which would be the very outside for all possible repairs, we have the cost of the ensilage to be $1.14 per ton. Mr. Mills weighs his silos with the grain feed which he uses with the ensilage, a good idea where grain need to be used, which would be only necessary with the milking cows, the work horses, and the fattening stock, no grain being required for the rude wintering of stock. On April 4th, 1881 Mr. Mills stated to Francis D. Moulton that he had carried through the winter then just past, 120 horned cattle and 12 horses on the produce of 13 acres and with half of the ground feed that would have been necessary if feeding the best of hay instead of green corn fodder. With hay worth 20 to 25 dollars per ton as it was last winter in the vicinity of New York, and with two tons of ensilage equivalent to one ton of good hay as they all claim for it, I hardly dare mention for fear of ridicule from the skeptics, what Mr. Mills saved last winter by feeding ensilage to his 132 head of stock. But I will venture, 600 tons of ensilage equal to 300 tons of hay at $20 per ton $6,000—600 tons of ensilage at $1.13 per ton $678, a clear saving of $5,322 for the winter.

During the summer of 1880, Whitman and Burrell, of Little Falls, New York, erected a large stock barn 92x36 ft. and three stories high. They built on the hill side of the barn, opening into it, two silos each 27 ft. long, 16 ft. wide and 20 ft. deep. These will hold 250 tons each of ensilage. These silos are built of strong masonry, and roofe in with the barn. From seven acres of corn planted on the first o June, and harvested in September, they filled one silo to the depth o 16 feet and the other to the depth of 11 feet, taking seven days t harvest the crop. They put on the plank covering, and weighte with stones. On the 26th of October they opened one silo and foun the contents preserved in good shape. They fed their cows upon i during all of last winter, and they were doing well in milk and lookin well when Mr. Oatman, who will follow me, visited them in Marc last. Their ration per cow was 65 lbs. of ensilage, 4 lbs. of middlings and ½ ℔ of cotton seed meal per day.

As to the cost of their ensilage, Messrs Whitmen and Burre speak as follows: "We had when we commenced feeding, 212 tons o ensilage; the exact cost of harvesting it, filling the silos, and putting o the stones, &c., was $217, allowing full wages for our time. This two hundred tons is equal to seventy tons of hay, costing $3 per ton, or ten tons to the acre. We believe that by putting all the manure back onto the seven acres we can raise 40 to 50 tons to the acre. With fifteen acres of corn and twenty acres of pasture land they propose to carry fifty cows through the year, their plan being to feed ensilage in winter and to supplement the pasture in summer by a light feed of ensilage morning and evening.

One of the most stirring advocates of the new system is Dr. John M. Bailey, of Bilerica, Mass., who built the first concrete silo in the U. S., in the summer of 1879. He received his inspiration from reading J. B. Brown's translation of Goffart's story. He has contributed very much to the public confidence of the system by his energy in practicing it, and his activity in writing about it. He has two silos—capacity of 400 tons—which cost $500, or $1.25 per ton of capacity. He claims that under this system that milk can be produced for one cent per quart, butter for ten cents per pound, beef for four cents per pound, and mutton for nothing when wool is worth thirty cents per pound—a statement strong enough to craze Illinois dairymen who are now getting 45 cents a pound for butter.

Dr. Wm. H. Farmer, of South Amenia, Dutchess Co., N. Y., built one silo in 1880, capacity 250 tons, and has since been using ensilage for his winter feed. He carries a dairy of 86 cows, and is greatly pleased with his experiment.

James S. Chaffee, of the same town, built one silo in 1880, and I believe has since added another, his intention being to provide a variety of food, by using one silo for corn and the other for clover and Hungarian grass jointly. The clover could be put into the silo in time and later when the Hungarian was ready to harvest ; the clover could be safely uncovered to receive it on top and again weighted.

Jacob Pugsley, of Stanford, N. Y., built and filled a silo during the same summer. The quantity being limited, considering the number of his herd, he fed only a part of a ration of ensilage during the first winter. He says : "If it proves to be a fact that 60 pounds per day is a full ration for a cow, ensilage will be considered the most important discovery mankind has ever made since Adam found Eve."

O. B. Potter, of Sing Sing, N. Y., has been practicing a system peculiarly his own since 1877. He has been using underground brick silos. These are arched over and are provided with man-holes, or necks, through which the cut fodder is thrown into the pit below. It is then tramped down and covered with earth or brewers' grain. As it is not compressed with a continuous pressure of 50 to 100 pounds to the square foot the air is not entirely expelled and the ensilage is always sour. Mr. Potter says, however, that his cattle do well upon it. The silos are connected with each other by narrow openings, making a succession of chambers and also a passage to the stables, so that all the food and the labor of supplying it to the animals is underground and out of sight. He thinks well of his system, but is evidently behind the best light of the day on the new subject.

As the star of empire now lies in the west, it comes to us that the largest system of silos yet built in the United States can be found in the young state of Nebraska. They were built in 1880 at West Point, Cummings Co., and have a united capacity of 2,000 tons. There are four of them, each 60 ft. long, 16 ft. wide, and 20 ft. deep. Dr. Eager, their owner, thinks ensilage is cheaper than prairie hay at no greater cost than the cutting and stacking.

So far as I am informed, the Oatmans, of Dundee, have the honor of building the first silo in the great state of Illinois. To them be the credit of leading in a system that will show, according to my prediction, hundreds of silos in this commonwealth in the next five years. What they think of it will be presented to you by one of the firm who is to follow me in this discussion.

The ensilage system of preserving food green for winter feeding, is no longer a matter of doubt. It has passed the line of experiment. It is well established among our foremost agriculturists. It only remains to satisfy dairymen and stock raisers, and stock feeders, that it is profitable, that there is money in its adoption. This will soon be done. A few practical illustrations of it in Illinois, will set the system to going all over the state. Some say that it is premature for the west, that we don't need it in a country where feed can be produced so cheaply. To be sure all of the states do not yet feel the pressure of worn out lands as they of the east, but there is coming a time when all will be forced to adopt it in self defence,

Before closing I wish to speak of ensilage as a substitute for soiling. I am satisfied that the pernicious effects of soiling or feeding unripe grasses, and other plants, is not well understood. The meat of animals which are fed on it is injurious to health, and their milk the frequent cause of dysentery and death amongst children. The butter and cheese produced from animals fed upon unripe grasses are necessarily bitter and unwholesome. Disease is the immediate effect of it upon the animal. In the winter succeding its use, the farmer finds upon his hands ten or a dozen cows sick with hollow horn, or some other disorder that he does not know how to account for. Ensilage furnishes ripe wholesome feed and is the cheapest system of soiling. It is much cheaper to harvest the crop all at one time and feed it out from the silo, than to cut and haul day by day from the field.

It has occured to me that it will be practicable during the introductory period of the system for large farmers to make it a business to sell ensilage to their less favored neighbors, who could get their feed from day to day as needed, from those having it to sell The capital required to build the silos, and provide a fodder cutter, and power to run it, might be beyond the means of some who would want to use it. Such persons might be provided with their ensilage by the large silo men at a small price, and still at a profit.

It can be sold at a tenth of a cent a lb. and still double the cost of production. Suppose 60 pounds be a cow's ration for a day, the cost of provender for the cow would be 6 cents a day. In towns and cities there are many families that keep a single cow or two. The time will come when the man who fills his silos near the city, and peddles ensilage from stable to stable for these cows, will be as indispensible as the milk peddler now is to the families that do not keep a cow. Or as a substitute for this, the man who owns only a house and lot of God's foot stool will have his silo in his back yard, and a man who has the ground to raise the corn, and the machinery to prepare it, will take contracts to fill family silos and insure its successful preservation.

The method of preserving ensilage is now so well understood that there need be no failures. The rules are few and simple, and yet a departure from one or more of them may bring disaster.

I will enumerate them:

1. The silo must be so nearly water tight, and so well drained that no water can get in from the surrounding soil. The walls must be strong and perpendicular.

2. The corn or other crops should be cut when in full blossom, and when in full sap. With corn, the time of silking out is right, with clover, when in full red blossom.

3. The crop should be cut short with a fodder cutter, length not exceeding a half inch, and should be harvested promptly.

4. It should be tramped into the silo while filling, and when completed, planked over in sections not exceding 4 ft. in width with planks nearly touching the walls of the silo.

5. These planks should be weighted with not less than 50 lb. to the square foot. These simple rules cover the whole ground. No straw is needed under the planks. If an accident should happen to cause delay during the filling, sprinkling water on the ensilage already in the silo will keep it safe while the machinery can be repaired. The work of filling can go on as well during a wet day as a dry day so far as the success of the work is concerned.

Any new enterprise gives rise to a demand for new machinery especially adapted to its needs. This has been the case with the system of ensilage. A rapid, powerful, and durable fodder cutter was indispensible. Such a one called the cycle ensilage cutter has been brought out by the New York Plow Co. 55 Beekman St. New York. It does its work rapidly, and with less power than any one yet invented. It works with the draw cut and will cut ten tons of corn fodder an hour with six horse power. The cost I am not able to give at this time. I notice that a smaller machine of the same kind is now manufactured by David Dawton, at Racine Wisconsin, called the "Belle City feed and Ensilage cutter."

I have no doubt that Yankee ingenuity will soon devise a substitute for the troublesome and expensive plan thus far practiced of weighting the ensilage. I see no good reason why a system of screws might not be used if carefully attended to for the first 15 days aft the filling of the silos.

ENSILAGE.

BY E. J. OATMAN, DUNDEE.

Mr. President:—This subject of ensilage, to which the writer has been assigned for this occasion, is one filled with interest, not only to the writer, but to every man, be he dairyman, stock raiser, or cotton grower, from one and all, this subject is demanding the closest investigation, for if the claims of its advocates can be substantiated, and the system proved practical for the masses, then, we as farmers can no longer afford to while away our time on the present system of milk and stock productions. The possession of the mighty dollar being the stimulating power, which causes us all to labor so incesantly, it behooves us, as a body, to enquire into our present system of attaining that point, and ascertain if we are *wisely* devoting the means within our reach to the accomplishment of the desired end. Realizing as we did, that the net profit of our farm was not so good as we would wish, and not knowing *just how* to increase its returns, we were in a good frame of mind to recieve the impression, which was given us, by a gentleman from the office of one of the papers devoted to agriculture in Chicago, who, meeting us with the fabulous report of results being reached in some parts of the eastern states at that time, 1879, through the medium of ensilage, at once "*hit us hard in a weak place.*" This man used his best efforts to induce us to make our arrangements and go a head and build a silo the coming spring. The story seemed too good to be true, and the idea of cutting up and packing away in a hole, green corn fodder, and expecting to see it come out in first class feeding condition in dead of winter, seemed to us (like some of our good friends the past season hereabouts) to be an impossibility, it would heat, ferment, rot, &c., &c. A great many objections arose in our minds, and we refused to comply with the gentleman's request, at least until we knew more about it. We at once began watching the papers, and eagerly devoured every item relating to this, beginning to be interesting subject, and when we learned of the silo Messrs. Whitman & Burrell had constructed at Little Falls, N. Y., the writer at once determined to see that silo, and its "cow krout" as some are pleased to term this most excellent food. Accordingly, during the last days of Feb. 1880, the arrival of the investigating committee from Dundee, composed of the writer and his traveling bag, was duly announced. Not many hours thereafter the silo was reached, and the first move made, was to jump down into the capacious mouth of the same, bringing up on a section of ensilage which was being taken out to be fed to the stock. Before leaving Messrs Whitman & Burrell, the Dundee committee was fully satisfied that ensilage was a success, at least with those gentlemen. Their cheese, butter, and milk, all produced from ensilage, with no other feed, except a small amount of oil, and corn meal, were carefully examined and all were of the finest quality. The fact that there was nothing to fear in the way of producing poor goods from ensilage, was here proved to the entire satisfaction of the committee. Adjournment to Dundee thereupon took place at once, and very soon after report had been made, it was determined to go on and build a silo as nearly first class, as our means and the material at hand would permit. Accordingly on the 28th day of June, 1881, after staking out our location 49x43 feet adjoining our barn at the north end, we began excavating, using two teams, with plow and scraper, and after nearly 3 weeks work we had the satisfaction of knowing, we were ready to begin the building of the walls. Concrete having been deided upon for the construction of the same, the proportions to be one art water lime to seven parts coarse gravel, the latter containing and in sufficient quantities to cause the quick and firm cementing of he particles. To build the walls, and hold the concrete in place while etting, we proceeded as follows, wishing to make the silo 20 feet leep, we placed 2x4 scantling 22 feet long at intervals of 4 feet all long the outside of the walls and across the ends, staying them se-urely in a perpendicular position by braces from each. Wishing to ave the outside walls 18 inches thick, we placed a second row of cantling all around inside the others, 22 inches from them, these were lso securely braced, that there might not be any springing, 2 inch lank 12 inches wide were then placed inside the frame work, all round on each side, ends being squared so they would fit closely, hus forming a continuous box 18 inches wide around the outside of the ilo. Wishing to divide area in to 3 compartments, we arranged for wo cross walls in the same manner, only making these latter 2 feet in hickness. We were then ready to begin the work of filling the boxes vith concrete, these were filled during the day all around, the con-rete being made a little softer than ordinary stone mortar. After filling, he plank were allowed to remain in place until next morning, when hey were raised up their width, allowing only one inch to lap on the vall below, the box was then filled all around as on the first day, this peration being repeated day after day, raising the wall nearly one oot per day all around, and including the cross walls. The walls vere finally completed, after having used 537 loads of gravel just as we ook it from the pit, and a few barrels over 3 car loads of Utica ce-nent. After the walls were up, they were treated to a coat of plas-er on the inside, made of cement and sand, to even up the surfice and nake it smooth, that there might be as little resistance as possible to he settling of the ensilage. The bottoms were finished by giving hem a three inch coat of concrete, then a coat of plastering over that, his finished the inside work, and by this time the corn in the fields ad passed the proper point for cutting by full three weeks, much of t having dried up at the bottoms, while in some cases it was dry nore than half way up the stock, with this condition of corn we were ery anxious to begin cutting, and as soon as the walls had become ufficiently dry, placed our cutting machine and set the power in lace. We then attached a carrier, identical in construction with the traw carrier of a threshing machine. We then began the work of utting the corn, using a Champion reaper, to cut and rake off in bun-lles. Two men were placed in the field to assist the teamsters in oading, and with the aid of two teams to draw, we were able to put hrough the machine an average of 23 tons per day, cutting into engths of about one half inch, the fodder being dropped at the center f silo was spread evenly over the bottom by two men, who kept up continual tramp to compact the fodder as much as possible. A orce of about ten hands were employed in the ensilaging of the corn. n 13 days from the time of beginning, the cutting was finished and he silo full, a little more than even with the top. It was then ready to ecieve the cover, which was made from 2 inch plank grooving, and natching, and putting them together in sections about 4 feet wide,

with 3 battons made from 2x4 scantling, projecting 6 inches each si
of cover, that though these bearings all might settle together
though but one entire cover, the lengths were cut short enough
rest directly upon the ensilage with play of ends sufficient to permit
settling and not binding on the walls. When put in place, a wei
of one hundred and fifty pounds stone, per square foot was placed
on it, and we had nothing to do but await the proper time for op
ing. In the mean time many discouragements had to be met
seemed as if the community at large had constituted themselve
committee to throw cold water upon our efforts, by speaking
looking their disbelief in the success of our efforts, it was too prep
terous, cutting and piling up a huge pile of green corn, nonsense,
nothing but failure could come of it. This seemed to be the opin
of many, while a scattering few offered encouragement through th
"I hope you will come out all right and if you do, and it proves pra
cal, and you say, I shall go into it." Still another was met who wis
it might be a failure, for to succeed would be to place the power
greater, and largely increased production of milk in the hands of
and the then present, what was called low price of milk be driven
a result still lower, and of all the interested parties hereabouts, not
could be found who would say they believed we should accomp
our end. One good meaning friend asked but a few days previous
the opening of our silo, "what are you going to do for feed for all t
stock on your farm." You have nothing to count on but your c
stocks and hay, and that is not sufficient, that pile of ensilage
make you a big pile of manure to be sure, but will not be of
good as feed, it will be all rotten. All this experience did not sha
us in the least, from our opinion of coming success, and feeling th
we could well afford to bear the adverse criticisms of our well me
ing friends and neighbors, and when the continuous rains of the p
fall set in, and nearly, if not quite ruined a large per cent of the c
fodder standing in shocks in the fields, we could not quite help ex
ing just a little, over the fact of our safely stowed away ensila
Something like 225 tons being well housed and secure from all dam
by rain, be it much or little; this being the first point proved to us,
favor of ensilage over out door fodder.

Let us here turn back to our subject proper, assuming the ti
taken since we left our silo covered and weighted, to carry us to
time of opening, when we were to ascertain whether or not our inve
ment was to prove a failure, and our cherished hopes blighted. T
long continued rains and unfavorable weather had caused a hea
falling off in the yield of milk from our dairy, when on the 2nd day
Nov. we concluded to remove a section or two of cover and see w
we should see. The stones were removed, and the covers lifted,
the ensilage revealed. It had changed in color from the bright gr
put away, taking a more brownish cast, and emitting a pleasant a
smell. The juices seeming to be as when put away in quantity,
slightly impregnated with acid. The ensilage taken into the mo
and chewed, left a very pleasant acid taste, the fodder had kept p
fectly, (as compared with the only sample the writer has ever se
clear up to the cover and out to the sides, excepting a small quant

each side of the silo, where the rain had fallen upon the cover and
en directed to the outside ends, by the settling at each end more
n in the center, through weighting there and not in the center.
t it be here stated that at the time of filling the silo the building
w covering the same had not been erected, owing to inability to se-
re mechanics in time, and the weighting was being done, when a
avy shower came upon us. The ensilage was at once taken out
d fed to the cows, nearly all at once diving into it as though it al-
ys had been their ration and they had waited a long time for it,
re were a few exceptions, perhaps a half dozen, which did not take
dly to it at first, but during the day, all ate their allowance clean,
d ever since, no feed we have ever used has been so eagerly sought
er or so cleanly eaten up. The shrinkage which was taking place
ly in the milk was at once checked, and in a very short time the
w increased one can per day, the cows getting no feed but the en-
ge and one small ration per day of hay with a small amount of
ound feed. That the cows are thriving upon ensilage, after having
d that for nearly six weeks for their principal ration, can be easily
n by any one taking the pains of visiting our farm and looking
m over.

The corn was drilled in rows 23 inches apart, the ordinary white
n of the country being used, and owing to circumstances, over
ich we had no control, the yield was extremely light, one piece ot
acres giving an average of 14 tons, while the general average was
t 10 tons per acre, being not to exceed a $\frac{1}{3}$ of a good crop, this
all crop may be traced to several sources, first, to planting the
ong variety of corn; secondly, to continual rains preventing any
tivation whatever, and thirdly, to the severe drougth following
sely upon the heels of the rains, the latter cutting off the growth
d leaving some not over three feet high. The experiment of the
st season in the east has shown, that when the northern varieties of
n had been planted, the severe drougth caught and stunted it in
owth—while the southern varities, coming from as far south as
ld be obtained, were just in their element, surrounded by the ex-
me heat, and shot up an enormous growth, giving large yields,
ile the northeren varieties gave but a poor return—to the ensilage-
herein lies a vital point, which may not be overlooked while search-
for means to obtain large yields of fodder.

In conversation with our friend A., to-day, on this subject of the
lue of our new feed, he remarked he was afraid the cost of putting
s fodder into ensilage and housing it up in the silo at a time of year
en help was high and scarce—which nearly always meets us at the
e we want to do this work—would overcome the profit in the
ture. Let us look into the matter a little and see if we can ascer-
n the facts. We will not take any suppositious case, but will take
experience with which we have been met in our own transactions,
favorable as we know they have been when taken in comparison
h good average results with others. The average yield of hay on
farm has been one ton per acre this season, as nearly as can be
nputed without actual weight. The cost of harvesting and putting

this hay in the barn was $2.50 per ton, counting men's time at $1.5 per day and the same for the teams. Allowing $10 for the valuatio of the hay we have a net profit per acre of $7.50. Now, assumin that the statement of numerous gentlemen who have fed ensilage fo more seasons than one to be correct, " that two tons of maize ensilag is equal in value to one ton of first quality tame hay for feed," we hav from our field the present season an average of ten tons of ensilage equal in feed value to five tons of tame hay, at $10 per ton, equal $50.00, less expense of putting ten tons ensilage in silo, $1.00 per ton $10, we have a net of $40.00 to offset our hay profit of $7.50. W say nothing in this case of the increased flow of milk, which is universally testified to by feeders of perfect ensilage, over the yield fron hay. But, says my friend, you do not give a fair average of result in this showing. I admit I have not, and will take the actual resul obtained in the east last year and give another showing and see hov we come out. Mr. B. had one hundred acres meadow from whic he cut two tons per acre, worth $2,000.00 ; less cost of cutting an putting away (estimated,) $400.00 ; leaving a net of $1,600.00. Th average yield from his eight acres of corn, devoted to ensilage, wa twenty-eight tons per acre, equal to fourteen tons tame hay for fee worth $140.00 ; less cost of putting up twenty-eight tons, $1.25 pe ton, $35.00, leaving a net of $105.00 per acre, to be offset by his ha product of $16.00. I have no doubt some of my hearers may b inclined to give a prolonged whistle at the expense of this statement but, gentlemen, I pray you do not whistle until you get out of th woods—for even larger results than this can be shown from the book of not one man alone, but a large number. The facts vented in la statement were given the writer by the gentleman who had the experience, and as he is a man of note, largely known through this sectio we have every reason to believe them correct. The ground upo which the ensilage corn was raised on our own farm the past seaso was plowed immediately after the corn was removed and sown t winter rye. This crop is to be cut early in the season and ensilage the cutting to be done when in the blossom. This feed we look to fo holding up the flow of milk during the shortage of pasturage, whic nearly always comes at some time during the season, and result generally in a serious shrinkage of the milk product. The removal this rye takes place in ample time to permit planting the usual crop corn for ensilage, which, by dressing the land with manure in the fal will be ready to cut before time to begin the fall cutting of field cor and give a full crop. Through the aid of these two crops we expe to be able to keep up an even flow of milk at a very much reduce cost for the entire year, and thus add a large profit to our busine over the present system of producing milk. The farmer raising ensi age has no need for hay to feed his stock. Every spear raised ma be turned into money, using only the straw and dry corn fodder furnish change of food. Many instances appearing where farme have fed entirely on ensilage for fodder, giving but a small ration ground feed in connection, and meeting with perfectly satisfacto results in all regards. We have the testimony of one man who ha for long years, fed his stock upon tame hay, with a ground feed add

UNIVERSITY OF ILLINOIS
STATION.

tion, at a cost of one hundred to a hundred and fifty dollars per month for the latter, who finally built a silo and filled it with ensilage, and after having fed his milch cows and young stock for three months on nothing but the ensilage, says : " My stock to-day are certainly in *as good* condition, if not better, as any winter in twenty years when I fed the grain and hay combined. The flow of milk is fully up to the standard of any period under the old system of feeding.

In selecting location for your silo, choose that spot which will best suit the convenience of your business, always striving to have both as near the barn as possible. Look closely to the drainage. If a gravel hill can be had, you have the best possible natural location ; if none such are at hand and you do not find gravel at the bottom of pit, dig a ditch one foot deep all around your walls and fill with cobble stones ; then lead same into a well or sink, also filled with stone. Be thorough in this as in all your operations connected with ensilage and silos, bearing in mind the governing principle, for the preservation of green foods, to be the *exclusion* of air, and if the work be so imperfectly done as to admit water into the silo, air will also be there, and where these exist decay takes place.

Silos may be built from stone, brick, concrete or wood ; may be a ditch in the ground, an air-tight box, or any receptacle which will permit of a descending weighted cover and be air-tight. One man speaks of running a partition across one end of his basement, making it double with matched flooring, with building paper between, running the walls above floor of bay as high as desired, cementing the bottom and painting the joists inside. In this way a capacity of 200 tons was supplied, and at the trifling cost of $50 money out. I will not go further into detail of these cheap silos, as you may read of them all in any one of the works devoted to ensilage.

The entire cost of our own silo which, as before mentioned, was built of concrete and covered with a frame building, with side walls eight feet high, shingle roof, roller doors, and every requirement needed to make all first-class, may be stated as follows :

Doing the excavating..................................	$165 92
Labor in building the walls, including putting up and taking down scaffolds and staging, drawing 552 loads sand and gravel, and all the mason work.................	729 34
Paid for lumber and cement..........................	781 06
	$1,676 32

This amount includes full pay for all time of men and teams of the firm at full wages, and painting silo, and in fact covers all outlays to date.

In closing this paper, the writer would call the closest attention of any intending to build silos and plant for same, to the following points, all of which are of vital import to the success of the undertaking : In building do not be afraid of a little outlay ; make the structure strong and durable, bearing in mind that if imperfect, or partially preserved ensilage be good, perfect is better, and if your silo be made from stone, brick or concrete, you will have a permanent one, which will keep the fodder in perfect condition indefinitely; while a common affair may do after a fashion for a while, but will never give best satisfaction. "What is worth doing at all, is worth well doing," should here, of all places, be borne in mind. *Build early*. Do not wait until so late that your corn gets beyond the proper time for ensilaging. We began June 28th and were three weeks too late for our best interests. Note this carefully.

In planting, plant early from some of the large Southern varieties of corn, which will produce half more fodder than any of our home-grown sorts ; plant in drills, dropping about four kernels to the foot, planting two rows four inches apart ; then skip 28 inches. This system gives largest yields per acre of any yet tried among oldest ensilagists. Cut the corn when it is in the blossom, it being at that time supposed to be fullest of juice. Carry to silo as fast as cut in field and run through machine, made for the purpose, and cut into lengths not to exceed half inch ; bear this point of length of cut particularly in mind, as many partial and entire failures have resulted from failure to observe due caution here. Cut fast, filling at least two feet per day in the silo—the faster the better. Keep the cut fodder tramped as well as possible, using great care to have next to walls thoroughly packed or tramped. Horses may be used for tramping, or one or two men constantly walking over the mass, while keeping it evenly distributed over the bottom, will do very well. Fill the silo three to five feet above top of walls (by using temporary curb of wood,) that the walls may be full to top after compacting has taken place. Place cover, made as before described, upon the cut fodder immediately after being filled and put on one hundred and fifty pounds stone to square foot. Corn cut while at right stage of growth, cut fine, silo filled five or more feet per day, and covered and weighted as above, will produce ensilage as sweet as the day it was cut, and without acid.

In concluding, allow me to say that we feel certain no dairyman, in particular, can afford to be without a silo, and we believe the day not far distant when the exception among wide awake, practical dairy farmers will be the one who does not rejoice in the possession of a large enough and well filled silo.

The Secretary read the following paper :

WHAT IS ENSILAGE, AND HOW WILL IT BENEFIT THE DAIRYMAN ?

"Ensilage is green fodder preserved in pits called silos. This was first successfully accomplished by Auguste Goffart, in France, in 1873. The green fodder is kept in a state as near the natural food of herbivorous animals as it is possible, for use the year round when it is desirable to feed it, either in the droughts of summer or the cold of winter.

The principle of ensilage is essentially the same as that of canning fruits or vegetables, by excluding atmospheric air from these gigantic jars or silos. It is one of the most remarkable inventions, benefiting modern agriculture by supplying an enormous quantity of food for animals from the hitherto almost useless dry stalks of the cereals and grasses, which it now preserves fresh with all of their natural and nutritious juices. Thus, by ensilage, a large quantity of cheap food is preserved, and by means thereof all of the phosphates are preserved to the soil, and, therefore, two crops may be harvested from every acre at the least possible impoverishment of the soil, for these crops are gathered before the maturity of the seeds.

The process is simply to cut the crops designed for ensilaging just at the approach of, or early flowering season. These are cut by a power cutter about three-eighths of an inch long, so as to enable them to settle and pack firmly in the silo so as to most perfectly exclude the atmospheric air. Pressure sufficient to exclude and keep out the air is all that is required.

Among those who have taken advantage of this process since 1876 in this country are Messrs. Francis Morris, O. B. Potter, C. W. Mills, Whitman & Burrill, John I. Holly, Dr. J. M. Bailey, and scores of practical and scientific agriculturists, who have all verified the great value of ensilage by keeping larger herds on less land than it was possible on the old, wasteful, imperfect and indigestible and unnutritious fodder. Variety in crops for ensilage is desirable.

The feeding of properly mixed and properly preserved fodders possesses many advantages over the old system. First-class butter, cheese, beef, mutton, lamb and veal can be supplied to a high-priced market all through the droughts of midsummer, and the cold of a long and severe winter. All herbivorous animals thrive better in winter on ensilage than on dry fodder, and the quantity and quality of their products are superior.

Maize is doubtless the most profitable and the largest yielding crop. It should be cut at early flowering. Millet makes a large and profitable crop, as also does clover, for they can be cut two or three times in a season, and cut in early bloom, and when ensilaged, these crops never injure cattle even when very liberally fed. The Southern cow pea or bean also makes a valuable crop for ensilaging.

By the most exact calculations of those who have had the most experience with ensilage, it has been proven that at least one-third greater number of animals can be kept on the same number of acres, than by the old method of feeding dry crops.

All ensilage should be permitted to slightly ferment before feeding. At this stage it can be fed with corn meal, cotton seed meal, linseed meal, shorts, or bran, where high feeding is desirable. This plan is especially beneficial to working oxen, horses and mules. By ensilage the South can keep their mules at less than half the cost of other fodder and grain, thus saving a large sum of money annually. Near large towns where grains can be cheaply procured, it will be good economy to mix the ensilage and grains together, and fed with, or without the addition of bran or the various meals.

If a cow will more than pay her care and keeping in the dairy, she will nine times in ten pay also a premium on extra food supplied to her. The most liberal feeding for any product—whether milk or beef, or butter or cheese, or wool or pork—pays, provided the food can be all digested and assimilated. Grains may be preserved perfectly and clear, provided they are sweet and free from filth when packed ; by packing in a silo or air-tight pits or vessels, for years if need be.

Mr. White. of Staten Island, has silos, in one of which grains have long been preserved in a state as good and fresh as when dumped from the brewery. Grains can be advantageously mixed with the green fodders at the time of filling the silos.

Silos may be made of earth, brick, stone or cement ; and it is an economy to build two side by side, as in thus doing one wall, the centre one, answers for both silos. The dimensions must vary according to the quantity of crops ensilaged. Convenient sizes are twelve by twenty feet and fourteen feet deep, or twelve by thirty feet, sixteen feet deep. The depth of the bottom of the silos should be from four to six feet below the surface of the ground to maintain an even temperature. But the ground should be under-drained. The walls may be made of brick, stone or cement, cemented on the bottom and walls inside and out, and coated with a thin coating of refined and melted asphalt, which may be but on with a broom. This will make walls impervious to water or air. The inside walls must be perpendicular.

The silos should be covered by cross sections of plank three feet wide, battened and fastened with screws, and just long enough to extend the width of the silo, so that when lightly weighted they will settle with and cover the section of the silo for which they are made. By the removal of the section nearest the door of the silo, the ensilage can be cut down like cutting cheese, just in whatever quantity may be required for immediate use. The cut surface of the ensilage will not ferment, proving that ensilage can be transported like pressed hay. Though, if desired to be kept for a long time, it is safer to have it pressed into hogsheads. Earth silos, or those made of boards or plank are not so convenient or reliable as cement and asphalted walls, for these only prevent the entrance of air and moisture. Silos should be covered by a roof at least three or four feet higher than the top of the silo, to give ample room to fill them conveniently.

In the feeding value of maize ensilage it is estimated that 910 pounds is equal to one barrel of corn meal. A silo 20x12x16 feet will contain 100 tons of ensilage.

Prof. George H. Cook, of the New Jersey Agricultural Experiment Station — perfectly reliable authority — estimates that eighty pounds of good ensilage will furnish the full amount of carbhydrates for a full grown cow for a day.

Fresh brewers' grains may be preserved in silo, perfectly sweet, by means of layers of wheat bran, evenly spread over each layer of grains. Two inches of bran to each layer of six inches of grain makes about the proper proportion. This combination of bran and grains makes excellent food for milch cows, and when fed with ensilage it makes as perfect fodder as can be used for milk production in winter.

Breeding animals, when fed on mixed ensilage, seldom abort, and they suffer less in parturition. The young are hardier and thrive well ; they are less liable to sickness. The winter milk, butter and heese are of the finest quality, and, being produced in large quantity, nd brought to a ready and high market, the total receipts from sales nake a most encouraging showing in the annual income of the dairy. Many milk producers in the vicinity of New York are now feeding, nd will continue to feed, ensilage and the meals mixed during the vinter, thus securing large extra winter supply of milk.

It is estimated that ensilage can be secured at from seventy-five ents to a dollar per ton, or by this means a full grown cow or ox can e fed for from one dollar to a dollar and a quarter per month. Added o ensilage, a small quantity of corn meal will cheaply feed the workng oxen, mules and horses of the farm.

Next to a good pasture, no kind of food will so rapidly bring oung stock into maturity and into cash so satisfactorily as ensilage. To animals, ensilage furnishes not only a safe, but a most profitable vintering, so that the spring finds the herd strong, healthy, and fit or the labors and purposes of the summer.

The country must furnish a large supply of milch cows for milk roduction for towns and cities. Most of these must be kept within a onvenient distance from the cities. The system of ensilage furnishes hese cows in perfect health, and the cows in turn supply the citizens vith good, sound, healthy milk ; so that it it guarantees both health o the cows and health to the children and persons using it. For sick nimals there is no food so good as ensilage ; for it is as near to green rass as possible. There is a positive disadvantage in cutting ensilage rops too late, for late crops have too much woody fibre.

The past season has taught us that we might have saved our tock great suffering, and saved ourselves much money, had we proided against the drouth, by having secured early ensilage crops for eeding in the dry time.

Early calves and lambs will greatly improve on ensilage, as they at of it as readily as they do when they come on fresh and flush asturage. These very early young animals not only take kindly to nsilage, but they may be fattened rapidly and safely for early and igh markets, by judiciously and gradually adding and increasing orn meal, oat meal, or cotton-seed meal to the ensilage, by sprinkling upon it before feeding.

For fattening and finishing beef or mutton stock for market, nsilage is the most convenient and reliable fodder when the meals of ereals or cotton-seed meal is used.

Ensilage is a cheap and nutritious fodder, and the crops to furnsh it do not impoverish the soil, because the phosphates are not renoved.

During the drought of summer, ensilage secures a uniform and onstant supply of milk and butter, thus obviating the scarcity of these roducts at the very season when these necessary articles are in the reatest demand.

Milk and butter must be perfectly fresh and sound to be at their inest flavor.

A. S. HEATH, M. D.,

President of the American Institute Farmers' Club, Professor of the Department of Cattle, Sheep and Swine in the Columbia College of Comparative Medicine.

O. S. Cohoon asked whether ensilage would keep over one season, or be good to feed in the summer ?

E. J. Oatman said it could be kept as well as canned fruits.

Dr. Tefft said it could be kept even two years.

J. H. Broomell said a silo should be so constructed that ensilag could be had in summer as well as in winter.

Dr. W. A. Pratt said he was pleased with the discussion anc papers, and was satisfied with his experience ; he had fed twenty days ; milk increased twenty per cent.

Question—What is the quality of the milk ? Answer—No difference has yet been perceived.

C. H. Larkin asked several questions, and said there were twc sides to this question ; he had recently seen men who were intimatel acquainted with the pioneers of the ensilage system, and one said i was a failure, while the others said it was a grand success.

Questions were asked if ensilage would heat or freeze, but thes could not be answered satisfactory, as the parties present had no practical experience in the matter.

On motion, adjournd to 7:30.

EVENING SESSION.

The association was called to order at 7:30, and the exercises were opened with music by Prof. Quackenbush's Glee Club, whc sung " The Farmer and the Seasons."

Miss Bohn then gave two select readings, in a pleasant voice fairly captivating her hearers by her easy, graceful manner.

Prof. Morrow was to have delivered an addresss, but as he was absent on account of the death of his brother, no regular topic appeared, and a question drawer was opened.

Dr. Tefft asked, " How can France, with less acreage than th state of Texas, manufacture and export more butter than the Unitec States ?

J. H. Broomell gave as one reason the French farmer was adopting ensilage as a feed for cows.

C. H. Larkin said it was brains that did the work, and brains were better than manure. The education of the French farmers hac done much for the country, and we should have agriculture taught in our public schools ; was glad to know that the state had an agricultural university, and he hoped much good would come from it. Education properly applied would do much to enable us to excel France

Dr. Tefft said there were thousands of farms in France which contained but ten acres, and they were tilled ; we are land poor, bu if we had smaller farms we would adopt the system of the French and by so doing greatly increase our farm products.

H. C. Edwards asked, " How can Switzerland, with extent of territory about like Kane county, export condensed milk to America and compete with that made at Elgin ?

R. P. McGlincy answered by saying the question reverts to th tariff. While the duty on block tin was so great as to almost amoun to prohibition, and there was also a heavy duty on sugar, and thes two articles were largely used by the manufacturers of condensec milk in America. The Swiss product was admitted to our ports almost free of duty, hence their ability to compete with American manufacturers.

Some one asked, How to properly handle milk to get the best esults ? H. C. Edwards said you want good cows and good feed, with clean barns, and as soon as the milk is drawn from the cow, put t into water to cool ; milk spoils in a short time if allowed to stand without cooling.

G. W. Sutfin said gentle handling of the cows has something to lo with it. If the cows are ill-treated good milk can not be had.

J. H. Broomell said the vessels used sometimes have an effect on nilk—knew a farmer who used a wooden pail to milk in, but found n changing to a tin one that he got good milk.

Dr. Tefft said worry or excite a cow, and a great deal of milk vill be injured.

E. J. Oatman asked, "Is it possible to take five or six pounds of utter from 100 pounds of milk. He said a dairyman in Lake County ad reported a yield of over five pounds for a year.

George Dempster said that cows, when nearly dry, give much icher milk than when fresh, and therefore the yield of butter is larger.

Dr. Tefft said milk contains 12 5-10 solids, and of butter between our and five pounds.

Is the milk or cream from a cow in high flesh richer than that rom a cow in poor flesh, other things being equal ? The replies ndicated that the better flesh the cow was in the richer the milk.

On motion the Convention adjourned until 9 o'clock

THURSDAY MORNING.

The Convention was called to order at 9 A. M., and the proramme resumed.

S IT THE PART OF WISDOM TO DELIVER MILK BUT ONCE PER DAY AT THE FACTORY ?

BY I. BOIES, GENOA.

I say it is not. Why, the value of milk consists in the net proeeds. The cost of delivering milk, morning and evening, for the ear is ten cents per hundred for six months in summer ; fifteen cents er hundred for six winter months. How much more is milk worth elivered twice per day than once ? From twenty-two careful exeriments I make the difference twenty-five cents per hundred pounds. he milk of four cows, delivered at factory twice per day, will pay eir owners as much ready cash as five cows, their milk delivered nce per day only. This is allowing nothing for the quality of the oods. My own experience, which is not guess work, but actual test, hows there is one pound difference in quantity, and four cents per ound difference in quality of goods. I have not told it as large as it actually is, but you won't believe what I have told, but try it, prov it with a true pair of scales. The more particular you are in testin the more you will see the correctness of my statement. Another ev is cured by having your milk delivered twice per day—that is skin ming. There is more of this done than ought to be. There ar dairymen who skim their night's milk regularly, and say it is the own. So it is until they deliver it. Then it is in law a crime as muc as to water milk. The sooner milk is delivered to factory, after bein drawn from the cow and properly cooled, the more it is worth to th manufacturer and producer. I know there are very few factoryme that believe as I do on this subject, but all would if they would test as carefully as I have.

The best article I have ever read was written by Miss Morle of Baraboo, Wis. Subject—How to Make Sweepstake Butter. Th butter shown by her at the International Fair spoke volumes in fav of her theory. No once-per-day milk in that ; no collected cream i her theory, but pure dry air. The milk allowed to stand until rip for the skimmer, which is about thirty-six hours in cool weather, an twenty-four hours in warm weather. If all the milk of the state o Illinois was handled, as Miss Morley advises handling it, I think th net product would be nearly double what it now is. Verily it pay to do things well. I have often said a man should never be satisfie to milk a cow a year unless her product brought him net $75. O. Tanner and E. H. Seward both beat $80 in 1873, and milk not ne as high as now. Not half the cows milked—east or west—produ net $35.

Judge Wilcox said a year ago last May a test was made at th Elgin Butter Company's factory, and after a trial, those who deli ered twice per day were allowed one cent more per gallon than tho who delivered once. The test continued for ten days and was the given up. The difference, he thought, in favor of twice-a-day mil was about twenty-five per cent.

The question was asked why the company discontinued receivin milk twice a day, and George P. Lord said it was because they coul not cool the milk at the factory.

Some one stated that in Iowa the yield of butter from milk deli ered twice a day at a factory for six months was 4.20 pounds. A another factory for nine and a half months the yield was 4.16 pounc per day.

I. Boies said the milk at his factory was delivered twice a da He bought his milk ; paid 75c. per 100 for May ; 70c. for June, an 75c. for July. He sold the sour milk at four cents per can ; sold th butter milk in Chicago at fifty cents per can—now worth sixty cent He asserted that water was the greatest enemy of milk ; in washin butter he always added salt enough to the water to save the butte He good-naturedly stirred up the people, and they fired numero questions at him, all of which he answered pleasantly.

I. H. Wanzer said he had never received milk but once per da he could never get enough more out of twice-a-day milk to pay th expense of handling.

JOHN LORENTZEN'S PAPER.

Mr. President and Gentlemen: — Notwithstanding that every imaginable topic, bearing upon the industry you repreprent, that is, matters pertaining to the dairy, have been discussed times out of number at these conventions ; notwithstanding, that prominent men of scientific reputation have given these topics much thought and attention, it strikes me that our knowledge in regard to them is still very imperfect. One cause of this lack of progress in ascertaining truths and facts, I think, may be found in the indifference manifested by those who should be most interested. The practical, every day dairyman, in the indifference of him, who daily feeds the cow, who daily milks her ; of him who daily makes the cheese and butter, and of those who handle the money obtained from the product.

The plain fact of the matter is, these people shirk what they conceive to be very knotty questions. When they stumble over the big words of our dairy professor, it takes the breath out of them. When they read the intricate sentences of some scientific notability, it entirely takes the conceit out of them, may the oracle of science be ever so much in error or at fault, his word is taken without question—without comment. It makes a wonderful difference as to how you put it to a man.

Insinuate to John Smith that he prevaricates in what he states, he will perhaps consider what you say a joke. But tell John Smith that he lies, and he will knock you down. I do not wish to be understood as making aspersions against men of science as a class. Some are charletans, others are sincere and painstaking in their observations, and promulgate their views honestly, but all of them lack the practical opportunities of the every-day dairyman, and it is for these in the aggregate to put their shoulders to the wheel. They should open their eyes, while engaged at their labors, observe then everything in the minutest detail, and when meeting at these Conventions open their hearts and mouths and have it out with one another in friendly discussion. Thus I feel confident you will with ease solve problems of value in your business, that scientific theories would not.

At the late meeting of the Northwestern Butter, Cheese and Egg Association, held at Cedar Rapids, Iowa, committees were appointed to investigate during the coming year these two questions.

What is the cause of butter in packages bleaching at the sides ? and, What is the cause of bitter butter ? To start the ball rolling, I will proceed to answer these two questions, in my way, with the understanding that any one is at liberty to differ with me :

I hold that the bleaching of butter on the sides of packages is caused by the direct action of the air upon the butter, and occurs in this manner : The wood of the package is steamed before being worked, thus opening the pores or the cells by dissolving the gum or sap of the wood, and driving it out, enlarging the pores or cells. When the package is filled, the brine will ooze through the open pores, thus causing a vacuum, which, by natural laws must be, and is, filled with air.

This admitted air does not only bleach the butter—it also absorbs the aroma, peculiar to it, and makes it taste and smell like a tallow candle. My views are borne out by numerous experiments, made with butter and other animal fats with uniform results. The cure of the fault is to prevent the cause.

The second question I will proceed to answer as follows: Bitter butter is obtained only during cold weather, and for these reasons, I hold, the butter fat in milk or cream is essentially animal fat. The fine flavors or the bad flavors are absorbed by it from the scum of the milk or cream. Under proper conditions the fine flavor may be developed, and by judicious management incorporated with the butter; the reverse is done by improper management.

What I will state now is no theory, but facts gleaned from numerous experiments and practical observations during a number of years. The fine peculiar aroma—I mean by it, that exquisite flavor, which, when incorporated in your butter, brings the dollars at the market—is not observable in new milk. During warm weather the milk attains cetic fermentation in, we will say, twenty-four hours; at this stage your butter aroma is at its best. As fermentation proceeds, in the same degree does this aroma deteriorate, however. The butter, or, properly speaking, the milk or cream does not become bitter. Hence, I make this deduction, that if milk or cream is allowed by proper elevated temperature to obtain cetic fermentation, the fault complained of—bitter butter—does not occur. We all know that temperature is a prominent factor in all chemical changes. I will instance a plain example: A potato, when it has become frozen, becomes sweet in taste; an orange under the same influence, intensely bitter. In the same manner does milk and cream become bitter, very bitter, when held for a space of four to eight days, exposed to the air and a low freezing temperature, and this flavor is incorporated into the butter. Now if we make our deduction, we find that if a low temperature, as it retards cetic fermentation and formation of the fine butter aroma, it promotes the evil complained of—hence, the cure would be to cause the fermentation by applying a higher temperature within a limited period of time.

With your permission, Mr. President, and a little further indulgence of the gentlemen present, I would like to indicate how not only fine, but fancy butter may be made during the entire season, and by anyone whose head is level or nearly so. I have practically demonstrated it to my own and others' satisfaction.

The formation of this fine butter aroma can be controlled, brought to its utmost perfection, and then when in its prime estate, incorporated in the butter and held there until it reaches the consumer—its ultimate destination. As proof I will mention that one tub of such butter made in a factory in this state, where hitherto, it had been impossible to make even a passable artice, was shown at the late exhibition a Cedar Rapids, and pronounced by a number of the best experts in this country, to be the finest, "by a large majority," of any butter brought there. One Iowa gentleman, a prize taker, candidly admitted

U. OF I. URBANA-CHAMPAIGN

that if his butter was worth forty cents per pound, that tub of Illinois butter was worth fifty. A sample may be seen here by any one who may feel interested. I conclude with the hope that my remarks may imbue some of the dairymen present with the idea that there is always room on top.

THE CREAM GATHERING SYSTEM.

BY JOSEPH SAMPSON, STORM LAKE, IOWA.

Gentlemen :—Being requested by your honorable secretary to make a statement at your December meeting in regard to the advantages of the cream gathering system, adopted by myself where I reside, during the past season, I would briefly state, the advantages of this new system consists in its bringing a greater number of patrons scattered over a wider area into association than could be done under the old system. At our factory, during the past season, we gathered cream at a distance of over twenty-five miles from the factory—that is, we took in cream, hauled in a direct line to our factory twenty-five miles ; besides other cream that was hauled to a railway station the same distance, and then sent by freight train forty miles. From all of this cream we made good butter. At our factory during the month of July we made on an average 1,600 pounds of butter per day. This butter all sold at the highest quoted prices for Iowa creamery butter in the City of New York. This simple statement I make to show that under this new system introduced by Mr. Fairlamb, a wide range of country can be gone over, and a valuable product saved from the Chicago classification of "grease butter." We were able to pay our patrons more for their cream than they could have sold their butter for, if same had been sent to Chicago.

We were paying throughout the summer months, fifteen to sixteen cents per guage for cream. Taking 100 pounds of milk to yield four guages of cream, or four pounds of butter (roughly computed) we were thus paying our patrons as much for their cream on the farm as was being paid in the eastert part of our state by the factory operators, who bought milk by the hundred weight, and raised the cream in their factories. During the summer in Delaware County, Iowa, 200 miles east of us, farmers who put in their labor of hauling milk to the creamery, received fifty-five to seventy cents per hundred pounds. Average, say sixty-five cents per hundred pounds. At same time our farmers were receiving from the same quantity of milk, for the cream alone, sixty to sixty-four cents. These figures are approximate; but when it is taken into account that under this new system we can gather in under one management a large number of patrons, scattered over the wide area named, the economic advantages are apparent.

For a sparsely-settled country, it is the best system that can be adopted. It enables the farmers to retain their skim milk on the farm, in good condition for feeding their calves.

This is a very important item with our farmers in Iowa. Large tracts of vacant land adjoin nearly all our Northwestern Iowa farms, over which cattle may range at will, free of cost to the owners. The profits from the annual increase of stock are very large. To attempt the introduction of any system out in this part of Iowa, which would require the hauling of the skim milk off the farm would be a very difficult task.

Having no interest in cans or creameries of any kind, I simply state the two essential benefits that accrue to the farmer in going into this new system of dairying. 1st. The saving of labor not having to leave his grain farming to haul his milk to a distant factory. 2d. The retaining of his skim milk in good condition on his farm for his calves.

To the factory operator, the advantages of the new system are not so great as to the farmer. But what is for the best interest of the actual tiller of the soil must be first considered. He is the one to be cared for and catered to in the long run.

In order to make the new system a success, the patron must be honest, and must not conspire with cream gatherers to defraud the factory, or practice any of those petty dodges we have had to meet in our short experience.

I don't want to go before Illinois farmers and dairymen to vent my spleen, or make any complaint about Iowa farmers ; but I would say that I consider it the duty of the farmer to encourage by word and deed any legitimate creamery enterprise, wherever started.

My efforts have been by many derided and my motives impugned. From the first I was told we could not make good butter out of our wild or natural prairie grass, and also that we could not afford to pay for cream what it is worth, and send men around to collect it. Both of these obstacles we have overcome. Our butter has been shown at Elgin in October, and was declared of as good quality as your average creamery, and as to giving enough for cream, we have paid from fifteen to twenty-five cents per inch or guage on Mr. Fairlamb's can since starting.

I consider that Mr. Fairlamb's invention will be to dairying in the wilds of the west, what Robert Fulton's invention was to navigation in the east. By adopting Mr. Fairlamb's plan, new settlers on our prairies can combine and start creameries everywhere as soon as they can get an assured patronage of 1,000 cows. They can afford to pay a first-class butter maker to manage for them, and if they will all be honest and cordially co-operate together, they can make just as good butter under this new creamery system in the plains of Iowa or of Southern Minnesota as can be made anywhere in the world.

I don't want to advocate this system for Illinois or the older settled portions of our country ; but for the new settlers on our prairies, for the pioneers of the genuine dairymen, I cordially endorse this system as being a wonderful step in advance over the average home-made butter-making system.

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

WHAT ADVANTAGE, IF ANY, HAS THE SYSTEM OF GATHERING THE CREAM OVER THE ORDINARY METHOD OF BUTTER MAKING?

I. H. WANZER, OF ELGIN.

This system of cream, or what is more properly called, the Fairamb system, is comparatively new, and all of its benefits have not yet been brought out, and we feel at a disadvantage when comparing this with other plans better established. As yet this plan has shown to better advantage in the newer settlements of the west, where stock aising has been one of the first points looked after. In fact it has become a necessity to them. So well has it worked in the newer dairy districts, that the older are now inquiring after it, and in many places he plan is already superceding the older methods of butter making. There are now six creameries within forty miles of Elgin being successfully operated upon this plan, all taking the place of the old plans of butter and cheese making together. This plan we think will yet how dairymen how to get more good butter and less poor skim heese. There has been enough already developed in this system to atisfy all, that when compared with the old way of making butter at home, the results are simply grand. Taking, as it does, the cream rom the farmer's door, releasing him of the labor of making the butter as well as the expense of bringing about them those conveniences, equisite to make even a fair quality of butter, always paying him as much for the cream that it takes to make a pound of butter, as the butter would fetch after being made, and paying cash instead of store pay. The manufacturer, with his improved appliances for gathering, churning and working, convert the cream into an article for the export trade, virtually bringing the most obscure farmer of the distant west, with his two or three cows, right into competition with his more avored neighbor, who may chance to live near the great dairy centres f Elgin or Dundee, and instead of having to rely upon a home trade, n account of the low grade of his goods can have the whole world or his customers. Now, at this age of dairying it would be folly to nstitute a comparison between the new and old way, unless we can show money in favor of our plan. There is no argument so good mong men, and our experience leads us to believe dairymen no exception to the rule. In my comparison I will try and show where the dollar comes in.

To the private dairyman we say we will give you as much for our cream as good dairy butter is worth in the market, and furnish ou cans to set your milk in that will produce one-eighth more cream han you can get off your pans. For instance, the farmer that makes ight pounds of butter per day through the year, one cow will give im nine pounds per day, amounting to 365 pounds in the year at wenty-five cents per pound—$91.25. In addition to this, his skimmed milk is left sweet instead of sour to feed young stock upon, and let it e remembered that he is relieved of the trouble of caring for or ven skimming the cream.

Now, when we come to compare this system with the so-calle
associated dairying, we may have a more difficult task to figure th
dollar on the side of the Fairlamb plan. And as this Convention wan
solid facts, and nothing else, we'll make the comparison, drawin
somewhat from our own experience in both branches of butter mak
ing, and somewhat upon the experience of others. First, we woul
say to the farmer that has no taste for diversified farming, and want
an excuse to go to the town or factory every morning, that some c
the items entering into our calculations will figure for naught. Th
farmer carrying milk to the creamery expects if he has not alread
sold, $1.50 per 100 lbs. for six months commencing with October
Let us see what this farmer would have done had he sold cream ir
stead of milk. First, he would have got four and a half guages c
cream to the one hundred pounds of milk. This cream at the averag
paid in Northern Illinois—27 cents—would have brought $1.22
value of skimmed milk per 100 pounds, 25 cents ; cost of carryin
milk to creamery per 100 pounds, 10 cents—leaving 7 cents per 1c
pounds in favor of selling cream. In the item of carrying milk to th
factory, I think it will be conceded that ten cents is about what it
worth to carry milk the average distance. In the matter of fixing
price upon the skimmed milk there would be a greater chance fc
difference, and without experimental tests to guide us in this matte
we arrive at conclusions somewhat from our own experience, ar
largely from the experience of others. Many dairymen of Knc
County, Ill., will tell you that one hundred pounds of skimmed milk
worth as much as a bushel of corn to feed. Not to feed alone, but
one explained by supposing a case. He said: "If I had twenty stoc
hogs to fatten, and one hundred bushels of corn to feed, then I wou
think that I were making money to exchange twenty bushels of n
corn for 2,000 pounds of skimmed milk, and feed them the eigh
bushels of corn with the 2,000 pounds of millk. I am sure I cou
make more pork, and in less time than I should, to have fed th
whole 100 bushels of corn with water." Another said: "I am mill
ing fifteen cows, and raising twelve of my best calves. I take abo
two-thirds of the skimmed milk together with some oil meal, ar
raise calves that make as good yearlings as those of my neighbor
who let their calves suck the cows. The other one-third of the mil
I feed to six brood sows, with an average of six pigs each. And by th
mode of management I think my milk worth thirty cents per or
hundred pounds." My individual experience leads me to place th
price of skimmed milk at twenty-five cents per 100 pounds, whe
used to feed young stock. It will be conceded by all that in order
give calves or pigs the proper start in life, they must have mill
These calculations would place the dollar on the Fairlamb sid
These conclusions anticipate good management in all the details
the gathered cream plan, and so does it need close managemeut
the butter and cheese factory to wring out $1.50 per 100 pounds fc
milk for the six winter months. The proportion of failures in crean
eries are likely larger in the Fairlamb creameries than in the other
for the reason that our plan of working is new, and some time ar
patience is required to be able to successfully operate creameries upc

is new system. Some of us can go back in memory to the early
uccesses and failures in inaugurating and perfecting systems whereby
n article of butter and cheese could be made in this section of the
est that might be accepted in the markets of the world. And some
f us have lived to see the blush mantle the cheek of those who pre-
icted that it could never be done. Then we looked to the east for
uidance—to-day, they come to us asking how it is done. So we
ould say to those that shake their heads and look wise, when look-
g over this new departure, hold on. Before you know it your
eighbor will have distanced you in your self-conceit, as many of us
at bore the burden of opening up this new country to the dairy in-
erest have seen others left far in the back ground, because to lend
ncouragement to us in that early day was in some way to conflict
ith their present arrangements. It is a matter of fact that wherever
e gathered-cream system has come in competition with other forms
f associated dairying and has failed, the causes have been traced
irectly to mismanagement. Good butter can and must be made
pon this plan, and in order to do this all the details connected there-
ith must be attended to, and when understood, are no more com-
licated than in other systems. Of the 170 creameries running in the
nited States using the Fairlamb can alone, ninety per cent. of these
e a pronounced success. The fourteen creameries under our care
e past season, although the first season, in every instance succeeded
yond the most sanguine expectation of the proprietors, and notwith-
anding that some of these started late in the season, there was an
ggregate of over 800,000 pounds of butter made in them, and all
lling fully up to Elgin Board of Trade prices.

The late exhibition of butter, made at Cedar Rapids, Iowa, where
,000 pounds were shown, made from cream, gathered from the
airlamb can alone, has gone far to dispel the feeling among butter
alers and consumers that good butter could not be made from this
an. This, coupled with the fact that gathered cream butter, when
ade by competent butter makers, has brought the very highest
ices in all the eastern markets, will do much to inspire confidence
the system. There is another phase connected with this plan of
irying. It admits of a greater range in farming. We need more
versified farming ; the milking of cows alone, as is now practiced in
r larger dairy districts, seems to narrow down the chances of profits,
hilst the raising of stock and other laudable and healthful forms of
rming would not only increase the chances of gain, but put the
rmers' boys in a way to become acquainted with more than one
gricultural pursuit, with a view to enlarge instead of narrowing down
e mind.

Besides this, the Fairlamb system would give each dairyman the
pportunity of raising their own cows, instead of filling up the waste
going out among those that follow this form of dairying, and tak-
g up with the culls of their herds. The tendency of the associated
rms of dairying being to lower instead of elevating the standard of
eir herds.

In conclusion I would say that I believe that Mr. Fairlamb h given to the world a system for making butter, when perfected, th is destined to revolutionize the whole butter making plans of t world, and I believe the day near at hand when it will be as strang to find a churn or milk pan in the dairyman's house as it is now find the spinning wheel and loom in the wool-grower's home.

At the conclusion of the above paper the Convention adjourne to 1 o'clock.

AFTERNOON SESSION.

The Association was called to order at 1 P. M., and the questio under consideration at the hour of adjournment was resumed.

WHAT ADVANTAGE, IF ANY, HAS THE SYSTEM O GATHERING CREAM OVER THE ORDINARY METHOD OF BUTTER MAKING?

BY C. C. BUELL, OF ROCK FALLS.

This is a question in dairy economics, and I have no disposition approach its discussion in a partisan way. I feel quite willing to allo those who have fixed opinions on the subject, or even prejudices, enjoy them undisturbed. I have no proprietary interests involved, r schemes pecuniary or other interest to advance, and I shall offer the fe things I have to say in the spirit of disinterestedness, but with the wis that what is most for the interest and prosperity of the masses engage in dairy industry may prevail. The older methods of butter makin have been very thoroughly discussed at conventions and by the pre during the last ten years. Their advantages and disadvantages ma be regarded as well understood. There is little need therefore, of re erence to them, and we can give our attention to facts, figures a other considerations pertaining to the new method, leaving our heare to make their own comparisons.

The first advantage which may be named for this method of bu ter making is that it is especially adapted to those neighborhoods which the dairies are small and the territory desirable to be covere large. Indeed, no other system of dairying is practicable in such case. Under favorable circumstances a cream gathering creamer can cover a region of eight to ten miles radius, with reasonable, if n maximum success. I do not believe, however, in mammoth creame ies sustained by the long transportation of cream—transportation b relays of teams perhaps, consuming much time and producing ov much agitation of the cream in transportation. Such enterprises should expect on general principles to fail of the highest success. T area named, however, can be covered by cream gathering teams whic will deliver their loads without transfer and in good order. Suc teams can pick up cream at farm houses in even so small quantities three to five inches a day to advantage. Indeed then, three to te cow dairies are relatively most benefited probably by this system, an it makes possible a mixed system of profitable farming of which da rying is a part. It does not necessitate large expenditure on the pa of the dairyman, nor require special skill, beyond what the proper ca

U. OF I. URBANA-CHAMPAIGN

of milk and the suitable feeding and care of stock require. A few farm dairies have turned out an exquisite product, but in general the farm dairies are the source of the most of our poor butter. The result of this system to this class of farmers has been to greatly increase their income from their herds, and thereby to multiply their profits, while at the same time materially lessening their labor. The success of the system under these circumstances, therefore, has been most marked and so far as I know, without exceptions giving satisfaction to all concerned. My own experience with this method happens to have occurred under precisely these circumstances and we give in this connection the prices we have been able to pay for cream during the current year: January, 23c., an inch making a pound of butter; February, 24c.; March, 22c.; April, 20@22c.; May, 16@18c.; June, 15c.; July, 15@16c.; August, 17@20c.; September, 22@25c.; October, 26c.; November, 26@28c.; December, 28c. Relatively to the market price of butter a larger price was paid during the warmer season of the year, for the reason the expense of gathering was less, the expense of selling less, and especially the yield of butter per unit of measure, or inch, was better—the cold weather bringing serious shortage of yield per inch, a matter which must be taken into consideration of both manufacturer and dairyman.

Second. A creamery situated amidst large dairies would enjoy advantages much superior to those in the case above described. The labor and expense of gathering would be greatly lessened. The circumstances of cream raising could be and naturally would be more perfectly controlled, so as to give the best quality of product. Indeed where butter making alone is the object it would seem to be the cheapest as well as the very best mode of butter making. I have in mind a creamery for the making of butter alone, managed on the milk carrying plan by associated farmers, which I am told by different persons connected with it, is being compelled to change to the cream gathering plan or loose its customers. This occurs where complete harmony prevails, and where success according to the system has been considered achieved. When the object is to make good butter and poor cheese in addition from the same milk, of course another element comes in. This presents a tough subject in more than one sense. Our Conventions may very properly discuss it in the future as in the past, but the whole business will ultimately turn upon the question of profit and loss, in a commercial way. But it may fairly be submitted in this connection whether the value of the skimmed milk, and that usually skimmed sweet, would not more than overbalance the profits of making and selling a poor cheese. I am not prepared to give precise results of my own experience in the feeding of skim milk, but taking the evidence of others it may be rated at not less than twenty cents a hundred pounds, and when skillfully used as a part ration for young stock, either calves, pigs or colts, its value is far above this. Of one thing I am quite positively convinced, that the sweet skimmed milk is of considerable more value than the sour swill which would come from the factory.

It is to be remembered, however, in the consideration of this subject that cream gathering business is in its infancy. The best modes in many particulars have not yet been found out, or when found out have not generally been adopted. The business is in an experimental state, and it has yet to carry the load which inexperienced beginners, unskilled manufacturers, and those operating under unfavorable circumstances, are laying upon it. Even the unit of measure, for measuring cream, has not yet been agreed upon—the quantity taken by different parties using different apparatus, varying not less than ten per cent. probably in extreme, if not more. Most of the cream gathered has been transported in cans of various sizes, liable to the extremes and hurtful effects of cold in winter and heat in summer. The experience of the last year indicates that these will ultimately be displaced by an anti-heating and anti-freezing tank, which will deliver the cream without change of condition. When these improvements in details are complete, as I believe they are destined to be, and economic questions relating to the industry become settled on business principles, I anticipate not only a greatly increased growth, but increased and satisfactory profits to all concerned. When that time comes the cost of gathering will not exceed one cent a pound of butter in summer, and one and a half cents or two cents in winter. The expense of manufacturing will not be more than one-half that of making butter from gathered milk, and the capital invested in buildings and fixtures will be correspondingly less.

The quantity of the product will be as good as can possibly be made from the milk of different herds. The strife among dairymen will not be to produce the most possible of milk regardless of quality ; but to produce the most and best cream. The effect in improving the character of our butter dairy herds, will be most marked and beneficial ; but on this quite important point I will not take time to dwell.

In conclusion I would say that the genius of Mr. C. C. Fairlamb, who devised this system and put it into practical execution, is worthy of all honor and fame, and both will be secured to him, together with the gratitude of the masses of dairy farmers. I predict that within ten years four out of five pounds of the butter product, which reaches the great dairy markets will be made according to this system. While I do not believe that any individual dairyman, who has already built up a reputation for producing fine goods, has any special personal interest in increasing the magnitude of the dairy business in this country, which will inevitably accompany the success of this system, coupled as it will be with the natural advantages of the great pastoral regions of the west, the disinterested and benevolently disposed watching, who is noting the progressive development of the great natural industries of this country with such an interest. While I believe it is in the interest of public health, public morality, business prosperity, and the general public good, to suppress hurtful adulterations of food of all kinds, and of butter and cheese in particular, by the intervention of law. I regard the cheap and abundant production of good butter the best remedy of all. This I believe will be the only effectual and abiding remedy. If our great dairy industry could be allowed to develop under the fostering influences of the great natural advantages for production, which this country possesses, as compared with oth parts of the world, if our dairy products could find their natural outlets, untrammeled with commercial restrictions, which delusive theories of protection and monopolistic influences impose upon our foreign commerce, I should expect to see this branch of agricultural industry, together with other branches, increase to a magnitude not now dreamed of by the most extravagant prognostication of events. As it is, it will keep pace with the other branches of agricultural labor, for the pursuit of which the creator has given this country pre-eminent advantages, and I hope to see the dairymen of our own state in the vanguard of those adopting improved methods, and receiving correspondingly increased profits for their industry, intelligence and enterprise.

C. S. Kilbourne, of Elgin, was also assigned to this topic, but prepared no paper. He spoke, however, briefly, but said he had no experience in the matter ; yet, from observations, did not believe the system practical for Northern Illinois.

Mr. Wanzer's paper drew out many questions ; especially from the producers of milk, who inquired among themselves to know if they, who were delivering the milk at the factories, were getting all out of the milk there was in it. The discussion was prolonged and participated in by nearly all in the room ; some favoring the system, some a trifle skepitical and others opposed to it.

The Chair at this juncture appointed the following gentlemen to recieve Governor Cullom, upon his arrival at the depot : H. E. Hunt, George P. Lord and R. M. Patrick.

The convention now proceeded to transact miscellaneous business, and the first was the presentation of the

TREASURER'S REPORT.

R. M. Patrick, in account with Ill. State Dairymen's Association:

March 8, 1880, to cash received from Dr. Tefft	$ 24 50
Dec. 17, " " " " 56 members	56 00
" " " " " " Donations	6 50
Jan. 27, 1881, " " " 20 members, by Dr. Tefft	20 00
	$107 00

CONTRA.

March 8, 1880, by cash, per Anderson	$ 18 75
Dec. 17, " " " Dr. Pratt	10 00
" " " " " Hall Rent	12 00
March 2, 1881, sent Dr. Tefft balance	66 25
	$107 00

On motion, received and adopted.

SECRETARY'S REPORT.

Your Secretary came into office just at the close of the last session, and as soon thereafter as possible issued the annual report, which was placed in the hands of the members. The report speaks for itself. During the year just closed the Secretary has conducted a large amount of correspondence; not alone with the members and prominent gentlemen interested in the dairy industry, but with the Governor, Members of the State Legislature, and last, but not least, with the Minister, resident at Washington, from the Argentine Republic, who, having heard of Illinois and her dairy and cattle interests, sought information from this Association, to lay before his government. During the year I have expended for stationery, postage, postal cards and telegrams, $1.73, which amount is due from the Association.

Respectfully submitted,
R. P. McGlincy, Secretary.

On motion the Secretary's report was recieved and adopted, and the amount due for stationery, etc., was ordered paid.

C. C. Buell extended an invitation to the Association to hold its next annual meeting in the city of Sterling. He said they had ample railway facilities, and hotel accommodations, and a lively interest would be shown by the farmers and dairymen of that section.

S. W. Kingsley moved to accept the invitation, which was carried unanimously.

George P. Lord deplored the fact that there were no reliable statistics of dairy products, and the dairy interests did not receive enough attention from the agricultural department of the state and country. In illustrating, he quoted from Chicago papers, which, he said, were subsidized, to the effect that dairymen were making so much butter and cheese that the market would be overstocked this winter. When this statement was made butter was 36 cents a pound; now it is 45; which shows that the writer came as near the truth as a man could in shooting around a tree with a gun. He showed that the statement was made for the purpose of lowering the price of butter and cheese. He moved that a committee of three be appointed to procure reliable and full statistics of trade.

Secretary McGlincy seconded the motion and, in doing so, said that he was endeavoring to collect statistics from members of the Elgin Board of Trade, so as to show what was being done in the way of producing butter and cheese.

Others followed, showing the need of this, and commenting severely upon the lack of information about business in the state and country, and that the State Agricultural Society did not pay sufficient attention to the dairy industry.

The motion was carried unanimously, and the President was empowered to appoint the committee.

The Secretary read the following paper :

FOREIGN MARKETS FOR AMERICAN DAIRY PRODUCTS.

BY T. H. GLENN, OF CHICAGO.

The growth of the export trade in butter and cheese of this country is steady and encouraging. In 1878 the exports of butter were 23,000,000 pounds, and in 1880, 28,000,000 pounds. During the latter year we exported to Great Britain alone, 40,000,000 of cheese and 125,000,000 pounds in the aggregate to all foreign ports. The

UNIV. OF I. URBANA-CHAMPAIGN

ollowing table gives the quantities in pounds of cheese exported from he single port of New York:

	Total.	Same time last year.
iverpool	61,695,760	64,271,007
ondon	11,112,068	8,833,361
lasgow	18,198,262	15,270,329
ristol	7,267,206	9,771,070
ardiff	238,083	932,960
ull	1,107,076	250,141
ewcastle	719,492	509,819
avre	....	120,980
amburg	951,670	119,250
remen	42,942	575,480
ther ports	2,451,519	1,715,850
Total	103,874,187	102,290,370

The total export of butter for the same period this year, and to early the same ports, was 14,549,773 pounds—a slight falling off from he quantity exported during the corresponding period in 1880.

Another item may also possess an interest to dairymen in this onnection, and that is, that the shipments of oleomargarine from New York for the same time aggregated 4,220,573 pounds, but for the corresponding time last year they were 5,999,036. "Oleo-Margarine" oes not seem to be in quite as good odor with foreigners this year as ast. What the entire exports of dairy goods for the year will be, f course, cannot now be definitely given, but that a considerable inrease over former years has occurred is now certain. And this, too, otwithstanding that imitations or spurious articles—as oleomargarine, utterine, suine, etc — have entered into competition with genuine utter.

Before referring especially to the opportunities presented for cultiating foreign markets, let us briefly consider the home consumption f cheese. The cheese product of the United States per annum is bout 400,000,000 pounds, and, as stated above, we send abroad about 25,000,000 pounds annually, which leaves 275,000,000 pounds as the uantity consumed at home. England has a population of 25,000,000 nd her annual consumption, according to Hon. X. A. Willard, is over 00,000,000 pounds, or 20 pounds per capita. To consume our entire nnual product at home would only be at the rate of eight pounds per apita. Mr. Willard is also authority for saying (and you know his is igh and reliable authority), that if we used cheese as freely in this ountry as it is eaten in England our annual consumption would reuire one thousand million pounds. It is, then, of mnch importance hat our cheese-makers shall study the home market, or study the ost feasible measure of increasing the consumption of cheese at ome. It is gratifying to know that this consumption is increasing, nd that during the past two or three years it has been augmented rom 12,000,000 to 15,000,000 pounds annually. But this increase is ue, in no small degree to the rapid influx of a foreign population. An idea of the magnitude of the stream of foreign immigration is ained by the statement recently published from the statistics that 79,743 Germans arrived during the nine months in 1881 ending with September 30, and of all nationalities for one year ending July 31, 00,000 arrived taking all the ports together, It is not likely that the umber arriving annually will decrease for some years to come.

In European countries, as a rule, a much larger amount of chees per capita is consumed than in the United states. Our foreign population are nearly all of them liberal consumers of cheese. They woul probably consume quite as much per capita in America as they did a home if the kinds and quality of cheese to which they are accustome were at hand. As it is, they consume no inconsiderable amount o American cheese, but if the articles that have formed so large a portion of their diet were readily obtained the quantity would be vastl increased. Here, then, is a wide field for extending the manufactur of cheese in this country.- It is only to a very limited extent tha cheese resembling any of the foreign makes can be found. The cheddar cheese is manufactured almost exclusively, and while much mor of that standard make ought to be consumed here, there is a great opportunity to increase the cheese product of the country in the manufacture of other varieties. The immense number of Germans wh have sought homes among us and are still coming in an increased ratio, suggests the manufacture of Limburger and Gruyere to suit taste that have been acquired in the "fatherland." The Hollander looks i vain for their Edam and Gouda, and it is seldom that the Swiss encounters his Schweitzer Kase. The variety may be, no doubt, profitably increased by manufacturing goods suited to the taste of ou French and Italian populations.

But the consumption of cheese by our native population might b largely increased if a small fine cheese was in the market. The bul of the best cheeses made in this country is sent abroad, leaving onl inferior goods for home consumption, aside from a small portion of th finer makes. It is hardly to be expected that the consumption o cheese at home will materially advance under this state of things Second and third class articles of cheese are not the kinds that ou people desire, but that they would take kindly to *fine* cheeses in size suited to their wants weighing seven or eight pounds is highly probable.

A steady home market is desirable from another consideration Cheese makers know that prices in England (who takes 65 per cent of our cheese exports), are subject to great fluctuations, which necessarily affect prices in the United States. If a home demand was created which approximated the annual product of the country, ther would be much greater securities for the manufacturers.

In the United States where our population is constantly and rapidly increasing and changing and new industries are being rapidly developed, it is imperative that those who are engaged in any of th rural industries shall be on the alert, keep abreast with the age, an seize upon the opportunities offered for the profitable pursuit of thei avocations. The cheese industry presents one of the most feasible o such opportunities, and our dairy friends will do well to give the matter their attention.

A word more upon that branch of the subject relative to the influx of foreigners to our shores. The fact may well be emphasize that the makes of cheese in this country should be varied, not only t suit the wants of Americans, but to cater to the tastes of the vast an increasing influx of foreigners who are seeking homes among u

U. OF I. URBANA-CHAMPAIGN

oreign fancy cheese are now imported to the amount of $650,000 per nnum. If we can produce some or most of these varieties so that ey are equal to the imported article, we may eventually find an outt for large quantities of cheese other than Cheddars.

The best way to cultivate a foreign market in any commodity is ascertain what that market requires, and supply it in kind and qualy as nearly as possible. It is folly to send what is not desired, for ustom and prejudice will stand in the way of profit in ventures of this ind, however good an article may be. No time or money need be st in trying to educate a foreign market, save by slow degrees, into uying something different from what has long been demanded. The uccess of the English in selling their manufactures all over the world due, mainly, to finding out in advance what was wanted. A escription of some imported cheeses has been furnished by a New ork dealer in them which, I have no doubt, will interest you.

England produces many varieties, including the well-known Stilon, Cheddar, Queen's Arms, Cheshire, Wiltshire, Gloucester, Leiester and Derby. Stilton cheese is manufactured chiefly in Leicesrshire, and in shape is like a cylinder, ten inches high and eight ches across; it is very delicious, and worth here about 46 cents per ound at wholesale. Cheddar is similar to our factory cheese, and is ade of various sizes, generally 12 inches wide and a foot high, but metimes larger, and weighs from 70 to 120 pounds. It is worth 35 nts. Cheshire and Gloucester are also flat cheeses, of about 70 unds each, packed two in a case, and worth now 29 cents and 30 nts per pound respectively.

From France we have the Roquefort, the popular after-dinner eese, with its greenish veins, not at all attractive to those who first e it. Roquefort cheese is made from the milk of sheep and goats, incipally from that of the former, which are of the celebrated Larc breed, noted for their unusually large udders. The cheeses are ened in vaults constructed in the limestone caves and fissures which e found in the rocks that overhang the village of Roquefort. The culiar characteristics of this singular kind of cheese can only be obined by ripening in these vaults. Each cheese weighs about five unds, and is worth 35 cents per pound. France also produces many her kinds of fancy cheese among which are the Camembert Pont Eveque and fromage de Brie, which are small, soft, creamy cheeses the consistency of thick paste, and are great aids to digestion when ken after a heavy dinner. Camembert is imported in boxes of five zen pieces, and wholesales at $3.75 per dozen ; Pont l'Eveque is orth $3.50 per dozen, while fromage de Brie, which comes three in basket, brings $2.25 per piece. Neufchatel, commonly called Bonns are worth 10 cents per piece, are similar in appearance to the solled Neufchatel cheese made here, and with which almost every one familiar, owing to its similarity to pot-cheese. France also manuctures, in the county of Doubs, on the boundary line to Switzerland, Gruyere cheese, similar to the delicious Swiss product, but the qual is inferior to the latter.

From Switzerland we get the genuine Gruyere or Swiss cheese, hich is usually three feet in diameter, and weighs about 150 pounds, and is imported in tubs containing four cheeses. It sells at abou twenty-three cents per pound. Sapsago, or green cheese, in shap like an inverted cup, also comes from Switzerland. Each chees weighs half a pound, and is imported in casks containing from 250 t 400 pounds, selling in a wholesale way at eighteen cents per pounc The small, round Edam cheese, in shape and size like a cannon bal with a thick rind, of a bright red color on the outside, comes fror Holland, and is worth $11.50 per case of six. It is in great deman for vessels about to sail on long voyages, as its smooth, tough rin resists the attacks of insects and the action of the atmosphere. Ho land also produces the Gouda or pategrasse, which, in appearance, like an English dairy cheese, and in cases of six cheeses, brings thirt cents per pound. Gouda kosher, Gowsher kaas, is also from Ho land, and worth thirty-four cents per pound, while another Hollan cheese, called Leyder, or Cominje kaas, is only valued at twenty-fou cents per pound.

Parmesan cheese, the only kind proper to cook with macaron is imported from Italy in tubs containing four or five large, flat, roun cheeses, which are called loaves, and are worth thirty-four cents p pound. Italy also sends us Roman (formaggio Roman) at twenty eight cents. Strachino di Gorgonzola at thirty-two cents, and Cacc Cavallo di Napoli at thirty cents per pound. The demand for t different kinds of foreign cheese is in about the following order, t first-named being most called for, and so on in gradually lessenin quantities in the order named: Gruyere, Edam, Roquefort, Bri Camembert, etc., Stilton, Parmesan, and English Cheddar, et What are known as American fancy cheese are pineapple, little chan pion, Young America, Victoria, and English dairy, all of which are increased demand in this country.

There are numerous imitations of foreign cheese made in t United States, as, for instance, Swiss, made in New York, Wisconsi and Wheeling, W. Va., sells for 18 cents per pound, Limburger, ma in Wisconsin, New York, and Watertown, N. Y., wholesale at 17 cents per pound; Muenster, 20 cents per pound; fromage de Bri $1.25 to $1.40 per piece; Neufchatel, 3½ to 4 cents each; crea cheese, $2.50 per box of one dozen, and fromage d'Isigny, $2.20 p box of six pieces. All of these cheeses are excellent imitations of t imported, and as they are made by the same process as abroad, a by foreign workmen, they will no doubt, in time, supersede the i ported article altogether; in fact, Limburger is made here so cheap and in such perfection that its importation has almost ceased, wh some has already been exported to Europe. This industry of maki new styles of cheese is only in its infancy in the United States, but is expected that the capacity of the factories now in operation will n be sufficient to supply the demand. In fact, there are new factori in process of building; one at Theresa, N. Y., will cost, when fi ished, $15,000, and is intended for the manufacture of Limburg cheese alone, the entire product of which, it is expected, will be co sumed at home. There are, however, some foreign cheeses that ha not been successfully imitated here, and they are Roquefort, Stilt Parmesan, Camembert, and others.

Now, a few words about the foreign markets for butter. The airymen of this country have, if they will only properly cultivate it, a vide field for their dairy products in South America, especially in Brail. A number of the Brazilian states or provinces and towns conume imported butter in considerable quantities, some of which is nade in the United States, but by far the greatest quantity—indeed he bulk of it—is made in Europe. Our butter-dairymen will do well o investigate this outlet for the American product, ascertain what is equired by the taste of the consumers, and fill such requirement with he desired goods. France and Denmark supply the most of the foreign utter consumed in Brazil, and we are not willing to admit that those ountries are ahead of our own intelligent dairymen in the excellence f their products.

The climate of Brazil is so hot that few persons undertake to nake butter, and this condition of things will doubtless continue for a ong time at least.

The province of Santos consumes about 20,000 pounds of butter er month, and is supplied principally from France. It is sent mostly n tins of 1, 2, 4, 20 and 60 pounds. In Rio Grande the small conumption is supplied mostly from France. Porto Alegre, which conumes some 6,000 pounds monthly, was formerly supplied by the Enlish; but the French and Danish merchants have supplanted them. he price of butter in tins is 67 to 77 cents per pound.

The butter market of Bahia is of considerable extent. The anual importation is something over 1,200,000 pounds. The larger art of this is French butter, a small part English, some Danish and ome American.

In Rio de Janeiro the market amounts to 2,000,000 of pounds per ear, which was formerly supplied almost wholly by England; but rance now has the largest share—about 1,200,000 pounds; Denmark 00 pounds; and the United States and other countries 200,000 ounds. We send some to this market in tins.

Para consumes some 400,000 pounds, and was formerly supplied y Ireland with butter too much salted; but Denmark sent a better rticle in tins; and during the past few years Normandy has sent a onsiderable proportion of it in tins. The United States have sent a w thousand pounds.

The butter made in Denmark is held in high esteem on account f its keeping qualities. How it is made is described in a recent number of the *Milch Zeitung*, the method given being that followed at ne of the largest factories in Denmark, as follows:

The special aim at this factory is the production of the finest uality of sweet cream butter, and a good, not too lean cheese; a rge quantity of milk is worked up, fifty-five thousand pounds for nstance, in the week ending June 18. The cream from the finest kimming, taken off after the milk has stood nine or ten hours, is used r sweet cream butter, one pound of such butter requiring 35.4 ounds of milk; from the cream of subsequent skimming a small uantity of sour cream butter is prepared; taking both kinds of butr together, 31.2 pounds of milk are required for one pound of butter. o cool the milk as quickly as possible the tanks in which the milk vessels are to be set are first nearly filled with broken ice and a little water ; the milk pails, of oval form and holding about 70 pounds each, are then forced down into this thick ice-pap ; in forty-five minutes the milk falls from 86 to 68 degrees, and in thirty minutes more to 55 degrees ; when skimmed the temperature of the milk is about 36 degrees.

The cream is heated to about 52 degrees preparatory to churning ; in winter it is heated about 3 degrees higher ; the same is done if the cows have been fed on old hay, or if there has been an unusually large proportion of beans and vetch in their rations. The churning occupies from twenty-seven to thirty minutes ; no water is added during this operation, skimmed milk being used to rinse down the sides of the churn ; the butter comes in small pellets, like pin-heads, and the churning is stopped at this point ; the butter is gathered in a strainer, and kneaded with the hands ; salt is added at the rate of three-eighths of an ounce to the pound, and after more working with the hands the butter is made up into five-pound rolls and laid in an ice chest, where it remains an hour and a half and cools down to 52 degrees again, when it is finally kneaded with the butter worker. Kneading at first with the hands is preferred because, as it is claimed, the buttermilk is more completely worked out. The utmost cleanliness is maintained throughout the factory, and scrupulously careful attention is required to the details of the management of the cream and butter, under the immediate supervision of the skilled dairywoman who has the whole in charge. The product of the factory is in nearly all cases ranked as first-class by the Copenhagen exporters whose judgment in the matter is held in extraordinary respect.

A large amount of information to dairy matters in foreign countries has been obtained through the consular service of the United States, which is serviceable in this connection. Other facts relating to management and methods employed in important dairy districts in foreign countries, might be described, but I fear I have already exceeded the limits to which, in the consideration of the topics found on your programme, this paper is entitled, and I will not further trespass upon your time.

On motion the Association adjourned to 7 P. M.

EVENING SESSION.

The Association was called to order at 7:15 P. M., and the session was opened by a song, "We Come Again to Greet You," by Prof. Quackenbush and his Glee Club.

Miss Kate Price, being introduced, read the following essay :

HOW MUCH ROOM IS THERE ON THE FARM?

BY MISS KATE PRICE.

Practically, one's estimation of the amount of room on a farm depends upon what kind of room one wants. An artist or naturalist might find ample room on one of the mountainous New England farms ; and the poet's fancy have opportunity for exercise, though it is said there is hardly room for the sheep's noses while they are cropping the grass between the rocks. Such a farm would be the despair of any but a New England farmer; while the Western farmer realizes his ideal of a farm (all clear room for agriculture) on the praries, where the Eastern farmer would have to learn a new art. But either on the New England or prairie farm, one attached to society might feel lost in desolation.

If one might select a farm with as varied advantages as possible, say, if you please, a well-ordered dairy farm with a surface alike satisfactory as to scenery and grazing land, and situated near enough to the railroads to enable the farmer to reach the markets and social life of civilization, then there is room on the farm for artist, naturalist, poet, man of society, or the farmer who combines the tastes of all in his own person.

There is a great deal of room wanted for life in this day. Room in various directions for culture is demanded by all classes of people, to an extent it never was before. The great tendency seems to be to regard city or town life as desirable, and to think the farm has not room for the education and the tastes developing with advancing civilization. Certainly the perfection of polish and culture is only reached through the most intelligent, appreciative experience in both country and city life, but we have had admirable examples to prove that there is room for us on the farm for all the culture and refinement a man may gain in his own or other countries. Still, young America thinks there is not room enough on the farm for him. Probably few farmers would dispute him, or care to keep the typical young American. He would be anything but profitable to keep.

The misfortune of the young generation leaving the farm is very greatly and generally regretted. It doubtless is an old suggestion that the trouble is farmers' sons and daughters are not taught to respect the farm as they ought; that they do not know how much room there is on it, and are not helped to develop its resources of education for themselves.

Of course, in years past, boys, cradled in hardships and reared in privation, have left the farm, developed, educated men in mind, men fit to command, fit to govern, fit to serve the world gloriously, as many familiar names in American history testify. It is not to be supposed, however, that because the farm has produced men with such characters in all the poverty of pioneer life that the way to make sure of the boys amounting to anything is to give them as hard and dry a life as can be got on the farm.

America had stuff to make men stout-hearted enough to endure any hardship, and with brains able for any emergency. None-the-less can America produce men of integrity and sense without the buffets of poverty and misfortuue. And the farm is the place that ought to produce such men; they are needed now as much as they ever were. Nay, it sometimes takes better material, in the Nation's building, to endure fair weather than stormy.

The younger generations know that civilization has traveled a mighty distance ahead for them, from where it was for their fathers. And if they cannot get enough of what seems their right on the farm, they must go where they can ; and go they will, with a misapprehension of the farm and farm life, which is an equal injury to themselve and society. No where should civilization show forth the true dignit of her advance plainer than on the farm. While the city follows he advancing steps with dissipation and debasement of her opportunitie the country should seize and conserve her gifts in their purity. Th farm has room for everything but the vices attendant upon civilization

It is as a school room that, perhaps, the farm is least worthily recognized. To send boys and girls away to colleges and boarding school is not usually to help their appreciation of the farm, or to materiall fit them to use its resources for education, or develop its grander possibilities as a home.

But to assist them to as much of an education on the farm, an from the farm as possible. That is, to show them how much roo there is on it, and to compel their respect. And, that is practica preparation for a practical life.

The farm is the natural kindergarten, where the little ones shoul learn order and cleanliness from nature ; active, intelligent labor fro the insects ; arithmetic from the flowers ; the elements of geometr from natural objects, and the musical joy of birds.

Delightful, indeed, would be their lessons in geography from thei native hills, and vales and streams ; and none happier than the instructive hours of child-life, spent in guiding little rills in channels, illustrating the mighty rivers of the earth, or building the shapes of the continents with earth and stone and sand. And this is practical geography ; much more of an education than the inaminate pouring over geographical paper, patch-work of red, green and yellow states.

Children would always rather their play should mean something and no where is there room for it to mean more, educationally, tha on the farm. But the education capacity of the farm is not merel primary ; there is not a branch of common-school studies that ma not here be pursued, and with advantage to most of them, as well a to the health and happiness of the pupils.

The boy with a bent for engineering should be assisted to buil his dams and bridges over the pretty turbulent brook in workmanlike shape, and with regard to scientific principles, thus to learn how great engineering feats have been accomplished with rivers. A brook illustrates the laws of currents, the making of new and abandoning of old channels, the deposition of sediment, the formation of islands and even deltas, as well as a large stream.

It is to the natural sciences that the children will be indebted for the truest ideas of the value and nature of the farm.

When through botany they have learned the variety and beauty of the plant-life supported by the farm, from the oaks to the mosses at their roots or the lichens on their trunks ; when zoology has made them acquaintances of the woodchuck and his burrow on the hillside, the birds resting in the woods or meadows, the butterflies that flit across the path, the myriads of beetles, armored splendidly in bronze, gold and purple, the hosts of exquisite microscopic creatures that populate every pool of stagnant water, then have they some idea of the room nature has on the farm.

And when the children have come to realize the geology of the farm, when a boulder tells them a story of its journey with an iceberg of the glacial epoch, and the bits of coral and crinoid joints among the pebbles near it tell of life in tropic seas; when they have learned to the unknown depth think down through the thousands of miles beneath their feet, through of strata, clear to the mysterious heart of the earth—whether of molten rock or of strange materials dense enough to make up the average computed by scientists—that is as if one had secured a sort of hold on the earth's axis itself, in this wondrous journey with the earth. But to come to read the history of the surface of the farm, to look through the centuries and follow the work of the frost in the fissures of the rocks, as season by season it has rent the solid layers; to follow the delicate chemical action of the atmosphere in oxidation, and of water in dissolving out the cements and soluble portions until the result is soil—the clay from granite still retaining its quartz and mica in sand and scales, the pure clay of slate rocks, the marl from limestone, the sand from sandstone—then will they have some conception of the work nature has done on the farm.

But that is not all. The surface bears record,.too, of that epoch when the polar ice-cap was pulled low down over the face of the earth, as far as Ohio, Illinois, and Iowa. Every where is to be found the drift or loose material transported by the ice.

In the quieter geological ages succeeding floods have at rare intervals shifted the soil, and water in gentle rains and streams have worn away and transported soil from one place, to be deposited and rearranged in another.

The vegetation of unknown centuries of summers has enriched the surface with vegetable mould. This, too, being disturbed and moved more or less in the ceaseless circulation of water, even to the washing bare of hills, when deprived of protecting forests, down to the crude gravel and clay.

This, the history of the farm, is a history surely fit for the home of man. The inheritance of the farm as a birth-place is like a bit of right to the earth, remaining from Eden.

But this is the farm that boys leave with the impression that there s room on it for only driving work; a struggle to get the ground planted in the spring, a fight with weeds and potato-bugs through the summer; a hot, hard job of harvesting and weeks of tedious corn-husking in the fall, with the endless circle of chores especially aggravated for winter. Girls, too, rebel at the drudgery they find on the farm, and escape, if possible, to the reeking factories or nerve-exhausting school rooms.

But through all their lives I doubt if farm-bred boys and girls can ever forget some of the charms of the farm. I think springtime must bring memories of the dell where the earliest flowers bloomed, and a vision of the deepest-tinted Hepaticas, the delicate Dicentras and ferns, and the handfulls of Violets gathered there, perhaps accompanied with unconscious repining that the farm had not more room for them.

Why should it not have? When colleges are turning students out of their time-honored doors for study of nature, and prentice

works in her labratory, cannot some of the room on the farm be giv
to like culture ? Even at the expense of time, so valuable on t
farm ; even at the expense of hard-earned money ; where could it
better spent ? Money spent on the farm cannot be squandered in t
city. If half the money, worse than uselessly expended in the cit
could be used for the improvements of country roads so that soci
life on the farm could be facilitated, the world would be by far th
better off. For there is room for the most social of homes on t
farm, and a cultured hospitality attracts a cultured society.

It is not to be supposed but that the farm would still have to spa
some of her sons for the world's work. There is no better place f
a country's statesman, men of science, art and letters to be school
than on the farm. And the country could afford to pay liberally f
the schooling.

No poets ever sang sweeter than those who first learned with t
birds on the farm. The truest art is the product of the country.
was the shepherd boy, Giotto, who, taken from his flocks on the hi
side to Florence, overturned the gastly Byzantine art, degraded to t
last degree, and founded the era of modern art on nature and beaut

The country is always the guardian of the city, and creates a
preserves, while the city is undoing. Men, like trees, grow stout
and better-balanced singly ; and the farmer should compare with t
city-bred man, as the splendid oak, lord of all the sun and room it c
use, compares with the spindling trees in the heart of the fores
Above all the products of the farm sent to the world's marts, inca
culably more valuable than good grain, fine fruits, or sweet, pure mi
and butter, are women ; helpful, healthy and true-hearted ; and me
with nerves, and sinews and brains, country bred.

And, though lacking collegiate training or foreign polish, abo
all gentlemen, in true dignity, stands the real country gentleman.

ARE BUTTER AND CHEESE THE FULL MEASURE O THE VALUE OF MILK ?

BY GEORGE P. LORD, OF ELGIN.

Mr. President: We are to consider whether all the valua
qualities of milk are utilized in the production of butter and cheese,
that the market value of those products will represent the value
milk. Since the introduction of the "Factory System" it has becon
more and more evident that dealers in milk are fixed in their deter
ination to establish the market price of that article on the amount
dividends paid by the "factories," rather than on the intrinsic value
the milk.

This, then, is a practical question, and one worthy of our consi
eration. It is our purpose to take the aggressive side of it. W
affirm that butter and cheese which absorb only a portion of the va
uable qualities of milk, do not represent the full value of the milk ; an
we further affirm that there are valuable ingredients in milk which a
not, and which cannot be incorporated in either butter or cheese.
is not our purpose to fix the actual value of what is left of the mi
after the butter and cheese are taken from it. We only propose

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ow that it has a value which has been recognized always and everyhere. And here it is proper to state that there are values which n only be expressed by signs.

The sowing of a field of grain is a sign that the farmer believes at it is worth cultivating. When the farmer engages in stock-growg it is evidence that he thinks it will pay. If the custom of feeding certain class of feed for the promotion of the growth of young stock universal, then the evidence is conclusive that such food is valuable r that purpose. It will be admitted that the custom of feeding butr-milk, skim-milk and whey to calves or pigs is universal with those ho have been engaged in dairying, in all the history of the past. his being true, the evidence is conclusive that what is left of the ilk after the butter and cheese are taken from it, has a value ; or, in her words, that the butter and cheese did not absorb all that was aluable in the milk.

This custom of utilizing what is left of the milk after the butter d cheese are taken from it, is so universal that it should be as conusive evidence of value as we could have, had each farmer made a lculation, and expressed the value in dollars and cents. In one case might be more definite and satisfactory, but it could not be more onvincing. It may be objected that this statement does not show the alue of what is left of the milk after the butter and cheese are taken om it ; that if there is any value, that value should be fixed, so that ll may know how to make it available. It is proper, therefore, to onsider the value that may be realized from what there is left of milk fter the butter and cheese are taken from it.

Speaking of whey, Mr. X. A. Willard says : "It should, by no eans, be allowed to run to waste ; that it is a valuable food for pigs. has been stated, by those who are authority on dairy matters, that e whey of full-cream cheese from 20,000 pounds of milk will prouce 1,250 pounds of pork ; and the whey from that quantity of milk fter the butter and cheese are taken from it will produce 500 pounds f pork. This being true, every farmer producing ten cans of milk aily, who has it manufactured into butter and cheese, is entitled to an mount of whey that would produce 500 pounds of pork per month, r 6,000 pounds a year ; and if sold at $5 per hundred pounds would mount to $300. The farmer taking the same quantity of milk to a ctory to be made into full-cream cheese would be entitled to whey ufficient to produce 1,250 pounds of pork per month, or 15,000 ounds per year ; which, at $5 per hundred, would bring $750. The utter-milk and skim-milk from the same quantity of milk used for aking butter, would produce not less than 1,800 pounds of pork per onth, which, at $5 per hundred, would amount to $90 per month. his being true, it will be admitted that the manufacturer should crupulously divide the skim-milk, butter-milk and whey among his atrons so that each should have his just proportion of the value of is milk.

If we desire to be more fully impressed with the food value of hat is left of the milk after the butter and cheese are taken from it, e would say that so used it adds more every year to the cash value f the products of the country than is produced from the milk in any other way (the butter and cheese only excepted), and we challenge any one to show to the contrary. If our premises are true and our conclusions just, then all must admit that butter and cheese do not represent the full value of the milk; and that all attempts to make those products the standard for the market price of milk are unfair and unjust.

We come now to consider the proposition that there are valuable ingredients in milk which cannot be incorporated in either butter or cheese. Analysis show that good milk is composed of about 87½ parts water; 4 parts fat; 4 parts caseine; 4 parts sugar of milk and a small quantity of mineral matter, or bone-producing material. Butter contains 85 per cent. fat; ½ of 1 per cent. caseine; ¾ of 1 per cent. milk sugar; 13¾ per cent. water, and a small quantity of mineral matter.

Full-cream cheese contains about 35.55 per cent. water; 31.63 per cent. butter; 28.78 per cent. caseine; 1.08 per cent. lactic acid from milk sugar; 2.94 per cent. mineral matter.

Cheese, from partially skimmed milk, contains about 35.65 per cent. of water; 26.27 per cent. of butter; 31.12 per cent. of caseine; 3.01 per cent. latic acid from milk sugar; 3.95 per cent. of mineral matter.

Skim cheese will analyse about as follows: 38.91 per cent. water; 25.15 per cent. butter; 29.37 per cent. caseine; 3.51 per cent. lactic acid from milk sugar; 3.06 per cent. mineral matter.

It is evident that there are some of the valuable ingredients left, either in the butter-milk, skim-milk or whey. Let us therefore pursue our investigation, and we shall find that the butter-milk and skim-milk contain one-sixth of the butter, and nearly all of the caseine and milk sugar that was in the milk, or nearly two-thirds of the valuable constituents of the milk. The whey from full-cream cheese contains 55 per cent., and that from skim cheese 39 per cent. of the valuable ingredients that were in the milk. Every analysis of whey that I have seen, shows that it contains about 3 per cent. of the butter; 25 to 30 per cent. of the caseine (that part of it which is albuminous in its nature), and nearly all of the milk sugar that was in the milk. Mr. X. A. Willard says that "the albumen in the milk cannot be coagulated by rennet; that it separates only at the boiling point of water, and then rises to the top in the form of a thick, white scum."

It may be objected that we have not shown that any of the ingredients of the milk which are left after the butter and cheese are extracted have any market value, that if they have, it should be made to appear. In reply we say that milk sugar is an article of commerce, and that its value per pound is equal to the average price of butter and cheese combined; that any farmer would be a gainer who could exchange the butter and cheese for the milk sugar that is contained in his milk (returned to him in a marketable shape), provided he could sell it at the present market price. He would then recieve an average of one dollar and eight cents per can for his milk the year round. Every farmer producing an average of ten cans of milk per day, produces a quantity of milk annually that contains about 10,000 pounds

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of milk sugar, which is worth $4,000. If he could add this amount to the value of the butter and cheese contained in that quantity of milk, he would find dairying quite attractive.

The milk sugar in the milk which is used annually in the United States in the manufacture of butter and cheese, if saved, and sold at the present market price, would produce in five years an amount of money sufficient to pay the National debt. Will any one be so kind as to tell us where the value of milk lies ? whether in the butter and cheese, or in that which is quite too frequently allowed to run to waste ? It is objected to this showing that, while it is true that milk sugar is valuable, and is an article of commerce, yet as a matter of fact, we do no not manufacture it in this country ; that we have to deal with things as we find them ; and that so long as farmers are willing to send their milk to the factories, and receive for it the dividends obtained from the sale of butter and for it in any way you please, and yet we are confronted by the fact, that cheese, they should not complain if the market price for milk is based on the value of these two products. This is the logic of the trade, and all will admit that the trade logic is very convincing, and for that very reason it may be a question worthy of the consideration of dairy farmers, whether it would not be the part of wisdom for them to select their dairy stock with a view to the production of butter. We may rest assured that the American people prefer butter to cheese. It may be questioned whether we consume as much cheese now, per capita, as we formerly did, whereas the demand for butter is increasing every year. Then again, we ought to have learned ere this, that England only takes our cheese when the price is ruinously low. Advance the price to anything like a living profit, and the export demand ceases at once.

Contrast the present with the past of the English market for cheese, and you will find that, when their market was supplied with cheese of their own production, the price was 110 shillings, with but slight variations for a period of ten years. Now, when they are supplied with cheese of American production, the market price is but slightly above half what it formerly was, and the fluctuations are such as to deter any but a born speculator from shipping cheese to an English market.

Were all the milk that is now used in this country for making cheese, used in the manufactnre of butter, it would only increase our butter product about seven and one-half per cent., and this additional quantity would not produce a ripple in the butter market, whereas even a slight increase in our cheese product, would crush out what little of vitality there is in the market price of that article. Charge this state of affairs to the quality of the cheese if you will, or account the price of the best cheese in the market, as compared with the price of butter is very low. A moment's observation will convince any one that fine butter has come to be regarded by the public as the finest condiment that can be used in the preparation of food, and no housewife would deem it prudent or wise to spoil the flavor of the food by the use of an inferior condiment. This will account for the price which our fine creamery butter is selling for on the Elgin Board of Trade.

Take another view of this subject. The dairymen in Wisconsin made "full-cream cheese" a specialty, and prided themselves on the quality of their product. Now they are in a quandary as to whether they have chosen wisely ; whereas the dairymen of Iowa, who made butter a specialty, and have taken the cream of the business, are jubilant over their success.

It is true that the Iowa dairymen have been highly favored, in that the Governor and all the leading men of that State have been in active sympathy with their efforts. They have attended their Fairs and Conventions, and have used their personal efforts and the influence of their official station, in giving promience and notability to the quality of their dairy product.

This is as it should be. And here I may be allowed to express surprise that these in our own State, who are especially charged with with the oversight of our agricultural industries are rarely if ever found at our Dairymen's Convention. I know that it is not a Fair, where articles are exhibited, that will attract public notice. It is simply a gathering of men who are heartily enlisted in one department of our agricultural industries, and who meet to devise means for its fuller development, and one would naturally think that the members of our State Agricultural Board would deem it a pleasure, even though they did not regard it as an obligation, to be present at our annual gatherings, so as to lend the influence of their official position in furthering our endeavors. I hail it as a happy omen that our Governor has arranged to be present with us on this occasion.

In behalf of this association, and of the dairymen of this State, I thank him for this manifestation of his interest in our welfare, and I may be permitted to express the hope that this interest may be so abiding that he will frequently favor us with his presence and his cheer.

At the conclusion of Mr. Lord's paper, Gov. Cullom was introduced to the audience, who received him with cheers and applause. After complimenting Miss Price on her able essay, and expressing himself pleased with Mr. Lord's paper which had given him much light on the subject of dairy farming he spoke as follows :

GOV. CULLOM'S SPEECH.

Mr. President, Ladies and Gentlemen : I know of no subject which would seem more appropriate for me to talk about, holding the relation I do to the people, than the condition and affairs of our State. There is no country in the world which possesses the natural resources essential to the necessities, comfort and happiness of a people, equal to the United States. Our prolific soil produces, under the hand of free, intelligent labor, a superabundance of the greatest variety of food, not only in sufficient quantities for ourselves, but sufficient to supply the wants of another nation as large as our own.

The element of the soil, wonderfully incorporated in plants and flowers and trees, develops a result in grain and fruit and fiber, in this as in no other country on the globe. Our mountains yield us iron, lead, silver and gold in value of untold millions ; we have our cotton

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States, our mineral States, our manufacturing States and our agricul-ural States. Illinois, which we proudly call our home, belongs con-spicuously to the latter class. Her fields of grain, her pastures and eadows, are the admiration, if not the envy of her sister States. Her citizens are employed in that industry which, increasing and en-arging with intelligent labor, tends to build up and perpetuate their omes, and thus to foster that patriotic love of country upon which its eace and safety rest. To protect these homes and farms, and hand hem down to their children as treasures of wealth, the cultivators of he soil will give their lives, if need be, in defence of their country and ts institutions.

In every sense Illinois is a new State. We have no grand hisoric past. As a State we cannot go back to the days of our revoluionary struggle for national independence; only a few of us can folow our history back without finding ourselves in New York, New England, Kentucky, or across the water in the old world. While this s so, the career of our State has been a proud one, and its growth steady and rapid. There is no page in the history of Illinois of which er sons and daughters may not justly feel proud; her people have een enterprising, intelligent, brave and patriotic.

Illinois was made a State in 1818—now nearly sixty-four years go—with a population of 40,000. We have grown to three millions seventy-eight thousand seven hundred and sixty-nine in 1880. We ave gained in population nearly 50,000 per annum since we became State.

Goethe once said that "he did not know whether figures govrned the world or not, but he did know that they showed how it was overned."

Napoleon said that "statistics mean keeping the exact account of nation's affairs."

The area of our State, as you know, is 55,405 square miles. It s larger than Massachusetts, Vermont, New Hampshire, Connecticut, Rhode Island, Delaware and Maryland, all combined. In comparison ith any of them it is an Empire. Its surface is the most level of all he States, with perhaps two exceptions. While from year to year the usiness of our people is changing and becoming more and more iversified, yet the foundation of the wealth of Illinois is our rich, prouctive soil. The pioneers of this State, all honor to them, were a oble set of men. They were hardy and temperate. They came ith their families to the southern portion of our State and settled, enerally near a stream or spring, and in or near the woods. For ears the settlers in the State seemed afraid of the prairies, and if a an ventured out into the prairie to open a farm, his neighbors on the reeks and clearings thought he was crazy—they said the green fly ould eat him up. Usually the first thing to be done after erecting a og cabin, was to clear a piece of land for tobacco, another for cotton, nd finally a piece for corn. They were about all from the southern States. Game was plenty, and they did not find it necessary to work ery hard to get a living—their wants were few, and the country was so generous in unfenced pastures for horses and cattle, and in mast for hogs, and wild fruit for man, that to procure subsistence was but a holiday pastime.

All this has changed—the broad, open prairies are changed into rich fields, bearing grain and grass—the free pastures are gone, and you provide for your cows and other stock in your own fields.

Illinois, according to the census of 1880, produced more corn, wheat, rye and oats than any other State in the Union. In comparing the productions of Illinois with those of the United States, we have reason to congratulate ourselves that we live in a State that produces such a large proportion of the entire cereal crop of the country.

The census figures are as follows :

Corn in the United States	1,754,861,535
Corn in Illinois	327,796,895
Wheat in the United States	459,591,505
Wheat in Illinois	51,136,455
Oats in the United States	407,970,712
Oats in Illinois	63,206,250
Rye in the United States	19,863,632
Rye in Illinois	3,121,682
Barley in the United States	44,149,479
Barley in Illinois	1,229,693

These figures show that Illinois produces about 18 per cent. of the entire corn crop, 11 per cent. of the wheat, 15 per cent. of the oats and rye, and 3 per cent. of the barley, which is certainly a creditable showing.

This State also raises more horses and hogs than any other State, and there are but three States which exceed ours in number of cattle —Texas, Missouri and Iowa have more. The number of horses in this State, according to reports, is 918,909 ; cattle, 2,045,366 ; tons of hay, 3,484,242, valued at $24,184,087.

The occasion of this Convention is to consider the interests of the dairy business in this State and country. This is comparatively a new interest in the West, and yet it has developed into great proportions. There is no branch of agriculture which has received more thought, or in which more skill is required than in dairying. The dairyman has learned how to extract the cream from the milk almost immediately, and I am informed that you have even invented machines for milking. I fear the days of the maiden with the milk-pail are over, and we can no longer sing—

"There, neither slowly nor in haste,
One hand upon her slender waist,
The other lifted to her pail;
And all the while she milked and milked
The grave cow heavy laden."

The progress you have made in this branch of industry is owing largely to your admirable co-operative system in the manufacture of butter and cheese.

Your conventions have had much to do with the prominence your industry has attained of late years. Your discussions enlighten and stimulate investigation and encourage all to secure the best results in breeding better dairy stock, obtaining the most approved apparatus for manufacturing and adopting the most profitable methods for marketing your products.

Butter and cheese are largely manufactured in factories where e most skillful experts are employed, and where all the conditions ecessary to secure the best quality of butter and cheese are carefully onsidered.

A successful dairyman must be a good farmer, a prompt, syste- atic business man, and, above all things, honest, and I might say, emperate in the use of water—not for drinking purposes, but as an rticle for reducing the quality of milk. The best and most successful anagers of creameries and cheese factories use unadulterated milk r making butter and cheese, and the consumer, I am sure, prefers e pure article for drinking, and for coffee and culinary purposes.

From returns to the Agricultural Department of the State in 880, I find the following statistics relating to the dairy interests in is state :

umber of cows kept in 1880	613,738
ounds of butter sold	24,553,449
ounds of cheese sold	6,187,680

The production of butter and cheese is yearly growing larger. I see by the papers that from June 18th to August 27th of this year e receipts of cheese at New York city alone were 1,256,000 boxes, nd that the total production in the United States is estimated at over ne billion pounds.

The reports to Congress show that the exports of butter in 1870 ere valued at the small sum of $592,229, and of cheese at $8,881,934, hile in 1880 these exports were, for butter $6,690,687 and for cheese 12,171,720, an increase of more than 100 per cent. in ten years.

We have laws in our State the purpose of which is to protect pure utter and cheese against fraudulent butter and cheese placed on the arket, but they don't seem to be enforced by the local authorities. hey ought to be enforced or repealed. The wicked practice of adul- erating butter and cheese and other articles of food and palming them ff upon the people as the pure article should be broken up.

If further legislation is found to be necessary let us have it. Hon- st butter, and cheese, and sugars, and syrups, and spices, cannot keep eir places in the market if they are to be placed in competition with rticles of the same name and appearance, but which are spurious. It well known that Illinois leads the other States in meat packing, in e lumber traffic, malt and distilled liquors, the manufactures of agri- ultural implements, and in the number of miles of railroad, while the alue of our coal product is exceeded only by two other States.

I noticed, a few days ago, that our worthy Commissioners of In- rnal Revenue reports that Illinois pays an internal revenue tax of early twenty-six millions of dollars for 1881, which is six and a half illions more than is paid by any other State, and which is one-fifth f the whole amount collected in the United States, while our popula- on is only about one sixteenth. The industries of any country, in rder to be profitable, must be diversified, and in our State they are ecoming more and more so. The time is coming soon when our tate will not be so distinctively an agricultural State in contrast with ther interests. It will not be long before it will be a great manufac- ring State. Our soil is rich almost beyond comparison, and because e have the soil and can produce the food in abundance, your towns will become manufacturing towns, and your beautiful streams in thi portion of the State will be utilized, and great mechanical industrie will spring up all over this country, and you will have a market a your doors for your products, and your lands will, in a short time, b doubled in value.

The farmers' interests are closely identified with all the great business interests of the country. The people of this great country canno all engage in the same business and expect to prosper. They canno all raise corn or make butter and find a market for either. The world i made up with all sorts of people, and they must carry forward all sort of honest business if they would prosper and be happy, and the ma engaged in any one kind of business is, in some degree, intereste in every other. We have in this country the cotton, the wool, th iron, the copper and lead, and, in fact, all the raw material in the greatest abundance, out of which to manufacture every article of us known to human life, and it is the policy of this country to encourag our home industries. By so doing we develop our own resources, an create a home market for our surplus products. Protection to American industry does not mean protection to the mechanic and artisa alone, or to the capitalist engaged in manufacturing, but it means protection to the common laborer, in fair wages, and to the agricultur is by giving him a home demand for his products. But diversified labo and pursuits will not enable us to reach our highest possible plane o prosperity unless our facilities for transportation and the extension o our commercial relations are also perfected. It is now a concede fact, in the discussion of the transportation question, that water navigation, in a measure, regulates and controls the rates for carrying freights, and therefore it is our duty to protect and improve our rivers lakes and canals. They are of late claiming the attention of our bes business men and ablest statesmen.

The enlargement of the Illinois and Michigan canal into a ship canal, and the improvement of the Illinois river, and the building what is known as the Hennepin canal between and connecting the two rivers, all should claim the attention of the public as of the highest importance. The work is national in its character, uniting the waters leading to the gulf with the lakes. The work of enlarging the canal and building the one between the Mississipi and Illinois rivers should be undertaken and carried out by the national government. The present canal now belongs to the State. In my message to the Legislature last winter I called the attention of the people to the question of enlarging the canal, and advised that the Legislature, in pursuance of the constitution, should submit the question to the people, whether the canal should be turned over to the national government, on conditions. The Legislature failed, however, to provide for the submission. I have no question but that the government will make it a ship canal if we will permit it. The business of the country will force the building of the Hennepin canal and the enlargement of the present one. The commerce of the country, not Illinois alone, demands that these works shall be begun, and that soon. When Congress gets to understand the facts thoroughly the work will begin.

Of the millions of bushels of grain raised in the United States, uch the larger portion of it is raised in these Western and North-vestern States. The profit of raising depends on the rate of freight, ery largely. We know that for the past year it has cost as much to arry grain, say 150 or 200 miles inland, to the lake by rail, as from he lake ports to the seaboard. The amount saved to the people by e building the Hennepin canal and the enlargement of the Michigan anal, would very soon pay for its construction. This great improve-ent commends itself to the agriculturist and the manufacturer, and ve of the Northwest must insist upon its being done without delay by he general government. I expect to see the day, not far in the future, vhen ships laden with the products of the Northwest will pass hrough this proposed canal from the Mississippi river to the lakes. The railroad interest in our State is an immense one,—we have 8,314 niles of road in the State, which have cost in their construction, not ess than three hundred and twenty millions of dollars. They earn bout fifty millions of dollars per annum, and their expenses are about hirty millions per annum. They employ, in the State, forty thousand nen, to whom they pay twenty millions of dollars a year. Our State s more thoroughly supplied with railroads than any other, perhaps, nd our level, rich soil makes it necessary, in the interest of the peo-le, that we should be well supplied, as in much of the year it is diffi-ult to market our products by hauling over the common wagon roads. The amount of capital invested, the number of men employed, and he value of the railroads to all the people and to all business, claim or them a fair recognition and fair treatment at the hands of the peo-le. We depend mainly upon railroads to take our products to narket. The farmer, in these days of fast living, would have a sorry ime of it without the railroad. While they are a power for good, hey may become oppressive, and hence the reason why the State lays ts hands upon them and says to those in control, "you may operate our roads for reasonable charges and profits, but you shall not extort nd become a power for oppression." We have had quite a struggle n this State and country on the question of the power of the State to egulate railroads. In the days when we had no railroads and men wanted charters from our Legislatures to build roads, they got them with any provision they desired to write in the bills. The time came vhen the people thought they were oppressive,—the struggle as to the uestion of the State regulating them began. The question got into ur Constitutional Convention, then into the Legislature, then into the ourts, and step by step we have been settling the relative rights of the eople and the roads, until to-day our Railroad Commission make and ublish new schedules of rates under the law, and for the first time in ur history the leading roads, without delay, make their schedules to onform to the rates fixed by the Board. Great progress has been nade in the right direction. I hope, as these questions pass by as set-led, over which the people and roads have differed, greater harmony f interest will prevail between the producers and the common carri-rs of the country.

It is, perhaps, not out of place for me to say a word about the resent financial condition and the expenditures of our State. It no onger owes any bonded debt. A few of its bonds are still out, but they are not paid because they are not presented. They have been called for, and the interest stopped.

Since the payment of the debt, the amount received from the Central railroad—7 per cent. of its gross earnings—goes into the State Treasury to be used in payment of current expenses of the State government. The last Legislature appropriated $6,140,272, for the fiscal years 1881 and 1882, which were for the following purposes :

At the very outset two million one hundred and seventy-five thousand dollars of the six millions go to the support of the common schools and normal schools of the State. Next come the charitable institutions—nine of them—four insane hospitals, one mute, one blind, one feeble-minded, one eye and ear infirmary, and one soldiers' orphans' home. The legislature appropriated for their current expenses and repairs, etc., $1,643,522—this includes the amount for carrying on the construction of the Kankakee hospital. The average number of persons in these institutions, including those in the reform school, is 3,135 —the cost of taking care of these persons, per capita, has been gradually reduced from year to year. In 1876 the cost per capita was $237.16 per annum, this year it is $209.21—leaving out Kankakee, where there are but few patients, it has been reduced to $201.28. There has been a strong effort by all the local boards and by the Board of Charities to reduce the expense, from year to year, of taking care of the unfortunates of the State, so that burdens would not bear so heavily upon the tax-payers, and so that the State could come nearer than it yet has to taking care of all the unfortunates, instead of less than half.

From information which I deem reliable, there are over 90,000 insane persons in the United States, and over six thousand in Illinois. There are about 1,500 mutes and 1,000 blind persons in the State : this being so, the State is yet to determine what can and shall be done in reference to this great number of persons not provided for by the State ; but I will not stop to discuss that question now.

I feel sure these institutions are honestly and economically managed. For six years there has not been a dollar of deficit in any one of them, but they have had a substantial surplus saved of the money appropriated.

The legislature appropriated $440,340 for the penitentiaries and the reform school. Much the larger part of this was for the construction of the Chester penitentiary and for the subsistence of the convicts while engaged in construction, a part of it for land and improvements of the Joliet prison, and a part for subsistence and repairs of the reform school at Pontiac.

Three hundred and eighty-two thousand three hundred and sixty-six dollars was appropriated by the Legislature for the legislative department, and the sum of $594,150 for the judiciary. This sum mainly goes to the judges and State's attorneys in the several counties—over $40,000 a year is paid to the State's attorneys. $438,882 was appropriated for the executive department proper, which includes all the State officers—Governor, Secretary of State, Auditor, Treasurer, Superintendent of Schools, Attorney General, and all the expenses at-

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nding the administration of the duties of their offices. $142,475
es to the Illinois National Guards ; $51,600 to the Agricultural,
orticultural and Piscicultural Boards ; $98,600 to the Canal and
ailroad Commissioners—$60,000 of the amount to be used by the
anal Board only on a contingency, which during the last two years
d not happen, and the money was not touched. $24,000 to the Sani-
ry Board. These, with a small appropriation for the Normal
hools, I believe, make up the $6,140,000 appropriated for the two
ears by the last Legislature. Nearly five millions of this sum, as
ou will see, go to the schools—the charitable and penal institutions
d the judiciary of the State.

I have thought it proper to refer to these matters, connected with
e affairs of our State, because you, as tax-paying citizens, have a
ght to know and desire to know what becomes of your money after
e tax collector gathers it in.

But I will not detain you longer. There are many facts connect-
l with the history of our State and its affairs which I would like to
lk about, if I had time. The people of this country are passing
rough an era of almost unparalleled prosperity. The country has
ver been more prosperous, as a whole. By wise administration of
fairs, and by wisdom gathered from the years of trial through which
e people passed in the period of our financial and business depres-
on, we may continue to go forward in increasing prosperity.

When Gov. Cullom concluded his speech, he stepped to the floor
the hall, where he was introduced personally to the audience, and
aking hands with each one who was presented to him, had a word
cheer to offer each of them.

The Convention then adjourned to 9 o'clock

FRIDAY MORNING.

The Convention assembled at 9 o'clock, and a score or more of
embers accepted the cordial invitation of E. J. Oatman to visit his
rm and view the silo and ensilage, conveyances being furnished by
e farmers and others of Dundee. After a drive of a mile and a half,
e farm of the Messrs. Oatman was reached, and the Convention
oceeded to inspect the silo, which is a very large one, and which
ey built the past season. The ensilage was in a fine state of pre-
rvation, and to show how the cows relished this kind of feed a dozen
ws or more were stabled and small ration placed before each of
em. The gentle kine hesitated not, but with a relish soon devoured
e feed, and from their looks plainly asked for more. The Oatmans
ave thus far made a success of their experiment, and are highly
ated with the results. Should any dairyman desire to construct a
lo, it would pay them to visit this one and learn the modus operandi.
he members of the Convention expressed themselves highly gratfied
ith their visit. The Convention returned to the hall at 11 A. M., and
e programme was resumed as follows :

HOW TO CONDUCT A DAIRY FARM.

BY D. C. ADAMS, OF DUNDEE.

The average dairy farm farm consists, perhaps of from two t two hundred and fifty acres. A farm of this size can I think be managed to better advantage, and will yield a larger return for the labo bestowed and capital invested than would a greater or less number o acres. Such a farm will, if mostly available and well managed, kee from sixty to seventy cows, which is as many as should be kept i one herd. Good, well arranged, convenient barns, of sufficient capacity to accommodate the whole stock are indispensible to success i dairying.

It is worse than folly to attempt to get along with cheap boar stables or inferior, inconvenient barns. The lack of money to build i not sufficient excuse. Better be in debt for what they will cost tha be without them. The economy of food and labor will pay the interest two fold. The buildings should be substantially made and so arranged as to economize labor to the utmost.

The most improved, modern barn for the dairy is built with high well-lighted basement, of stone or brick mason-work ; with drive-wa through from end to end, so the manure can be loaded directly on th wagon and taken to the field. It should be built with, at least, twenty-foot posts above the basement ; by so doing, sufficient room will b provided for storing nearly, if not all the fodder required for winterin the stock. On the floor above the basement considerable space mus be allotted for cutting stalks, storing feed, etc., and should be so arranged that the feed may be drawn through scuttle holes, to place convenient for feeding. One large barn is preferable to more smalle ones, it costs less in proportion to its capacity, and will be found mor convenient.

Special care must be taken in preparing the milk for the marke or factory. The pails, strainers and cans must be thoroughly cleanse and aired some time before using. Wooden pails should never b used. The milk must be well cooled, and scrupulously clean.

Use a wire and cloth strainer combined, and rinse it off with clea water frequently while milking ; but you must not depend too muc upon the strainer. If dirt is allowed to get in the milk it cannot b wholly taken out. Do not allow your cows to wallow in mud, or li in manure.

Sloughs should be drained by tiling or ditching, and if the latter the ditches should be covered or fenced. The stable must be kep well cleaned and supplied with bedding. The refuse of cut stalk answer well for this purpose, as they rapidly absorb the manure, s the barn will be comparatively dry, and the liquid which would otherwise be lost, will go to the fields with the manure. If these precautions are observed your cows will be kept clean, and with proper care in milking you will have clean milk.

The milk house should be adjoining or near the barn, and buil with due regard to keeping out heat and frost, and in a cooling tank with an abundant supply of water, which, in temperature, should no

U. OF I. URBANA-CHAMPAIGN

e much above fifty degrees fahrenheit. If the water should not be o cold it is well to lay in a stock of ice to be used as needed. The ank must be large enough so the cans may stand at least an inch rom each other and the sides of the tank, and they should stand on lats fastened to the bottom of the tank so the water can circulate reely around and under them. The tank must have a waste pipe on level with the neck of the cans. The water should be kept in mo- ion, at least until the milk is thoroughly cold. If you are not so for- unate as to have a spring of running water, leave the faucet of your eservoir open so as to produce a current. The cans should be put n the tank as fast as they are filled, and not allowed to stand in the arn till the milking is completed. If the animal heat is not taken out, lecomposition soon commences, and if the milk does not become pre- naturely sour, its quality will be impaired. About an hour will be equired to cool an eight-gallon can of milk.

Cows should at all times have access to pure spring or well vater, and should never be allowed to drink from stagnant pools or ny water containing impurities.

The cow may be termed a laboratory where milk is produced rom the food she eats and the water she drinks, and she cannot be xpected to turn out a good article unless supplied with wholesome ood and good water. Insist on your cows having gentle treatment, nd do not run them while going to and from the pasture. Never nisuse the boot or milking stool in attempting to reform a refractory ow. Nine times out of ten the remedy will make matters worse. f she cannot be overcome by kindness or strategy she is worth more or the butcher than the dairy.

Cows should have daily some out-of-door exercise when the veather will permit, but must never be exposed to severe storms or ery cold weather. The venerable Mrs. Partington never could see vhy hens wouldn't lay when eggs were scarce. To avoid a like per- lexity, arrange your dairy so as to have a good share of fresh milk- rs during the fall months, when there is always a good demand for nilk.

We cut our corn stalks, and feed liberally, throwing out the oarser part for bedding ; feed sparingly of hay twice per day ; also orn meal and bran mixed, from one to six quarts, according to the ondition of the cow and the amount of milk she is giving. When ats are plenty and not too high priced, we grind them with corn and nix with them.

The corn crop is justly entitled to the highest rank as regards its alue to the dairyman. While the corn is worth more for feeding han any other crop in proportion to the cost of production, the stalks, f properly secured and utilized, make excellent fodder for the cow, nd will go nearly as far as the same number of acres of hay. So in iew of its importance, special attention should be given to its culti- ation. Great care must be taken in the selection of seed. Always elect the choicest, well dented ears ; it should be gathered while the usks are turning, or before the early frosts, and put in a dry, airy lace, so it will become thoroughly dried before the cold weather omes on. Manure, if possible, the whole field intended for corn ;

spread evenly and pulverize it by the use of a heavy brush ; plow and harrow well and plant from the 1st to the 25th of May. We prefer to plant the early part of the month so that the cultivating may be through in time for haying, and it is less liable to be injured by early frosts in the fall.

After planting use the harrow until the corn begins to show above the ground. Commence with the cultivator as soon as the corn will stand it, and go through it at least as often as once a week till it is grown so as to well shade the ground. When the crop is matured and before the stalks are dried it should be cut and shocked. Commence husking as soon as the corn is cured sufficiently to crib. The stalks should be put in the barn, or stacked, as the husking progresses Some leave them standing in the field through the fall rains and even into winter. In this way they often become bleached and rotted until they are comparatively worthless.

From five to ten acres of thick-drilled corn will generally prove a good investment. An immense amount can be raised to the acre, and it is as good as hay for winter feeding, and in case the pasture should fail from protracted drouth, it can be cut and fed green. In this way the possibility of a famine may with reasonable certainty be averted.

Raise pumpkins with corn. They cost but little, and a couple of wagon loads per day through the fall will relieve the pasture and keep the stock in fine condition.

Rye is undoubtedly the best grain with which to sow timothy and clover, but as it is not sown to any extent on dairy farms the seeding is generally done with oats. We sow three pounds of clover with ten of timothy to the acre. If a larger proportion of clover is used on strong ground it will be likely to overcome the timothy so that only a crop of clover will be raised the first year at least. We have had quite as good success by mixing the seed with the oats and sowing with a broad-cast seeder. New seeding, having a good share of clover, should be cut the last days of June and the first part of July, and all grass should be cut before the stalk becomes woody. The meadow should be broken up after taking off the third or fourth crop ; the sod then readily yields to the harrow, and a good crop of corn is most sure to follow.

I have now only considered the farm as a financial investment, and have given a few scattered thoughts as to how in my judgment it should be managed to produce the best results. There is an endless variety of details, which cannot be written, connected with carrying on the dairy farm, and on their proper execution, success or failure, will very much depend. These must call into action the best judgment of the practical farmer. Comparatively few fully appreciate the value of their farms as based on the net income they will yield. Every farmer should keep a debit and credit account with his farm, showing the whole income and every expense incurred in carrying it on, and if he is thorough and efficient I am safe in saying he will think well of his investment, and will not be likely to barter it away for refuse stocks of merchandise or something else equally fleeting. He will then be able to compare accounts from year to year, and note the progress he is making.

Do not aspire to be the owner of too much land. The fewer Dalrymples we have the better for the country. As a rule farmers should own their farms, and cultivate what they own. If you should go out in search of a model farm, you will be likely to find it in the possession of its owner, and be a man of intelligence, taste and refinement, and that he values it not only for the income it will yield him in dollars and cents, but also for the home it makes for himself and family, and as such he is trying to beautify and make it attractive. It is for his interest to make improvements as permanent as possible, while the tenant can only afford to improve for to-day.

The gifted Ingersoll said, when speaking on this subject: "Renters can hardly be called farmers. There can be no such thing in the highest sense as a home unless you own it. There must be an incentive to plant trees, to beautify the grounds, to preserve and improve. Home makes patriots. He who has sat by his own fireside with wife and children, will defend it. When he hears the word country pronounced he thinks of his home. Few men have been patriotic enough to shoulder a musket in defense of a boarding-house."

The farmer has been termed the bone and sinew of the land. Then "quit you like men." Let your word be as good as your note. Avoid croaking. Do not worry through fear of being parched by drouth or flooded by rain.

Discharge your duty manfully, and then let your responsibility end. If in debt, get out as soon as you possibly can. "A mortgage casts a shadow on the sunniest field." Take a daily paper for your own benefit and that of your family; keep a conscience void of offense toward God and man, and you deserve prosperity.

Question—What is the reason for 250 acres being better than a larger farm?

Adams—Sixty or seventy cows are as large a number as can well be kept together, and such a sized farm is large enough to profitably employ the amount of help needed to care for the cows.

This was followed by a discussion on the size and manner of constructing a model barn.

On motion of R. P. McGlincy a committee of three was appointed to examine and report upon such dairy utensils as had been placed on exhibition.

The Chair appointed D. C. Adams, Benj. Cox and D. S. Jencks as such committee.

C. H. Larkin, from the Legislative committee, made a verbal report, setting forth what the committee had done since the last meeting, and on motion the report was accepted.

The Committee on Nominations reported the following officers for 1882, and on motion the report was adopted:

President, Dr. Joseph Tefft, Elgin; Vice-Presidents, C. C. Buell, Rock Falls; S. W. Kingsley, Barrington; C. H. Larkin, Elgin; S. K. Bartholomew, Marengo; I. Boies, Genoa; H. C. Edwards, Dundee; I. H. Wanzer, Elgin; L. B. Parsons, Flora; H. W. Meade, Hebron; N. Eldred, Gilman. Secretary, R. P. McGlincy, Elgin; Treasurer, R. M. Patrick, Marengo.

The Committee on Obituary reported the following, which was unanimously adopted :

Whereas, In as much as it has pleased Our Common Father to remove by death, since our last meeting, one of our number, J. R. McLean, we feel it melancholy pleasure to offer a tribute to his memory by the passage of the following resolution :

Resolved, That by the death of Ex-President J. R. McLean, the Illinois Dairy Association has lost one of its most efficient and enthusiastic members, and a man, who in all his relations to the body, was a courteous and intelligent associate, a man of sterling worth, who, by his genial nature, added much to the interest of our meetings, and by his progressive spirit contributed largely to the material welfare of the dairy interest ; and we recommend that the action be spread on the record.

J. H. Broomell,
C. H. Larkin,
H. C. Edwards.

The Finance committee reported having received $72.25.

On motion the Convention adjourned to one P. M.

AFTERNOON SESSION.

The Convention met at 1 P. M.

R. P. McGlincy, Secretary of the Elgin Board of Trade, presented the following figures, showing the sales of the Board from January 1, to December 31, 1881 :

The year 1881 opened with a very much larger amount of cheese in the hands of factorymen than they held at the close, with prices rather lower for the season. At the first meeting in January sales of cheese were made at 7½@8 cents, with a probable average of 7¾ cents per pound.

The price of butter held steadily through the month at 32 cents, with light regular sales, apparently indicating that the demand was not very good. One reason for this may be found in the fact that so much fraudulent stuff was being put upon the market elsewhere that the sales of genuine butter were restricted.

Cheese took an upward tendency about the middle of the month, and so continued until the 10th of May, when prices again receeded. During a portion of that time cheese frequently sold at 10 and 11 cents. Butter continued steady at 32 for a number of weeks, until April 19th, when it dropped to 30, and then its course was downward until June 7th, when it sold at 18½@19. This was the lowest point reached by butter during the year. It then again advanced slowly for a time, and then again rapidly, until December 13, when it reached 45 cents, which was the highest price attained on the Board for many years. After that date the price receded until the close of the year, when it rested at 40 to 42 cents.

There are no regular sales of cheese reported during the meetings held May 17th, May 24th, May 31st, and June 7th. On the 14th of June cheese sold at 5@8 cents, and from that date it advanced in price until September 13, when 1,685 boxes were sold at 12 to 12½ cents. This was the highest price reached by cheese during the year, with the exception of one sale of 50 boxes full creams at 13 cents, October 4.

From the table published below it will be seen that the total transactions are far in excess of what they ever were before in any one year, and in number of boxes of cheese and aggregate value of butter and cheese are greatly in excess of the sales of the Utica, New York, for the year 1881, or of the Little Falls, Boards for the same period. At the former the sales were 240,476 boxes, aggregating 14,444,760 pounds,and sold for $1,615,184.17. At Little Falls, the sales were 253,025 boxes, aggregating 15,181,500 pounds, and sold for $1,653,766.34. It will be observed that the cheese sold on the Elgin Board exceeded either of the above in boxes, but fell short two to three millions of pounds.

The accompanying table shows the sales by months on the Board:

MONTHS.	Boxes Cheese Sold.	Pounds.	Av. Price.	Pounds of Butter Sold.	Av. Price.	Total Sales.
January.....	32,992	1,371,188	8¾	278,473	32	$ 189,976.41
February. ..	21,724	817,457	10	249,822	32½	162,469.14
March.......	22,765	914,920	9 1-5	374,680	32 2-5	227,493.22
April........	19,007	667,653	8⅓	259,371	30	149,641.81
May..........	21,413	805,348	8	304,800	22 1-5	139,997.00
June....	29,105	1,280,119	6⅓	407,683	20	172,998.32
July	18,625	8 5,329	7	262,597	22	111,164.14
August	26,417	1,096,698	9	390,961	27	194,557.79
September...	24,082	872,448	11¾	266,297	33	198,947.28
October......	25,037	961,086	10¾	379.307	34¾	239,427.40
November. ..	12,844	480,622	9 1-5	264,559	37 2-5	143,049.75
December...	33,673	1,254.657	8½	430,079	42	289,877.78
Total. ..	287,664	11,327,525	9	3,868,629	30⅓	$2,219,600.04

It will be seen by the above that nearly two and a quarter millions of dollars were distributed among the milk producers of this section during the year, which, to say the least, is an exceedingly handsome sum, and far more than all other branches of agriculture have paid for the same time. Beside, the money is distributed monthly, thus giving the farmers and others who are interested in this industry, their funds at regular intervals. If we would add to this the amount paid for milk at the Elgin Condensing Factory and for milk shipped to Chicago from points tributary to the Elgin Board of Trade, as well as the total product of all the factories represented on the Board, we would find that the amount of money paid for milk, butter and cheese would aggregate fully five millions of dollars.

By comparison we find that the average price of cheese through the year has been 9 cents, and butter 30⅓ cents. The highest price paid for cheese at Utica, New York, was 13⅝ cents ; at Little Falls, 13 cents ; at Elgin, 13 cents. In both cases the cheese was full cream. The lowest price paid at Utica was 8½ ; at Little Falls, 7 ; at Elgin, 5 ; and the Elgin product was part skims, while the other were full creams. These comparisons are useful in that they show that, while comparatively a small portion of Illinois is engaged in dairying, and that while a large portion of the milk from that section is used as an article of food in its natural condition, Illinois holds a proud rank as a butter and cheese-producing state.

The programme was resumed, and the following question was discussed: "Is It the Duty of the State Government to Foster and Encourage the Dairy Industry of Illinois?" R. M. Patrick gave some very good reasons why the State should aid the dairymen, and among others was the fact that the business was largely experimental; that is, there were modes advocated, and the idea was to discover which was the best. The aid rendered by the State would be repaid many times, if the experiments could be made, and they should prove successful.

WHAT LEGISLATION, IF ANY, DOES THE DAIRY INTEREST REQUIRE?

C. H. LARKIN.

In discussing this topic it is proposed briefly to call attention to a few reasons why legislation should be invoked in the interest of this industry. To begin with, this proposition is made: That whatever lies at the base of general wealth and prosperity is a proper subject of legislation, and especially is this true regarding those interests that are largely experimental. Proof of this is unnecessary, as it is believed no one will deny. Again, it is assured that all will admit that the most valuable interests materially considered are those which produce —those that win food, raiment or wealth from land or sea.

Whatever feeds the people makes all other trades or callings possible. That the dairy interest occupies a conspicuous place among these industries is evidenced by the fact that all over the country dairy fairs and dairy conventions are held, and not only attract the attention of men practically engaged in it, but those from other walks in life, find time and inclination to attend. Not long ago a gathering of a few active dairymen was sneered at and deridingly called "A Chalk and Water Convention." Not so now. Our public servants whom we have helped to place in positions of trust and responsibility, find the claims of this industry cannot be ignored. And even politicians and office-seekers have been known to be attracted by the winsomness of the cow, dairy-maid, or something else, to come to our gatherings, go home with us and interest themselves in all the belongings of the cow-barn and creamery, until the whole business smacks of old-time poetry.

The magnitude of this interest is a very cogent reason why it should receive attention at the hands of our Legislature. The following will, I believe, fall below, rather than exceed, the actual capital invested in this enterprise in this State, excluding the amount invested in distributing milk in cities; also the no-inconsiderable sum in butter and cheese factories:

VALUE OF COWS, HORSES AND LANDS.

Cows, 1,000,000—$30 each	$ 30,000,000
Horses, 75,000—$80 each	6,000,000
Acres of Land, 4,000,000—$30 per acre	120,000,000
Total value	$156,000,000

Add to this the

Annual Value of Feed, say	$ 6,500,000
Labor	1,000,000
Loss on Stock—5 per cent	1,800,000
Interest on Total, at about 6 per cent	9,360,000
Making in all	$258,400,000

This, too, without the legitimate items of insurance, repairs, taxes and value of team labor. I come now to say something suggested by the supplementary part of the proposition started with, to wit : That the whole business is largely experimental, and because it is so, should receive attention from the government. Every dairyman knows that we are in possession of very few bottom facts, and most of those obtained by long, imperfect and often expensive trials.

In the nature of things the individual dairyman can only follow a certain fixed routine learned from books or his fellow. He cannot stop to analyze the milk of the various breeds of cows, and thus determine which is the more profitable for him to keep in view of the particular purpose for which he labors. Neither can he tell how best to treat the various soils on his farm to make them produce the best forage and grain, or how to secure and use the same with reference to the law of equivalents. The cause, cure and prevention of disease is to most of us a sealed book. Hence, we have to support an army of " cow or hoss " doctors, that often know less of the trouble than we do ourselves. Only a man or institution, supported by the government, or immensely rich can do this.

The commercial history of the common shrub, sumac, is a striking instance in point. A few years ago the rural population of some states gained a scanty living by gathering and marketing the leaves of this shrub ; but it was found to be inferior to the imported article. A commissioner was appointed, who, having his compensation secured, and having no other interest in the matter than that of the people, spent months in studying the roots, stalks and leaves of this shrub. The outcome was very simple ; but worth thousands of times more than it cost. He found that if gathered at a certain stage of growth they contained more value than the imported article.

The United States Fish Commission furnishes another fine illustration of what can be done in this direction. Composed of a body of purely scientific men, it has done a work of immense practical value, a work that no individual or trade could do. It made experiments. It compared the known with the unknown, and directly the unknown is for the benefit of all. Much of the work done by the commission seemed to the fishermen themselves as idle and useless. "What is the use of dragging the sea for new worms and bugs ?" "Of what use are these numerous bottles filled with crawling things ?" ask they. But at last the dredge brings up a new fish from far down below the reach of longest fishing line ; but one that proves good for the market and to eat.

Scientific research and experiment must be pursued without regard to profit. To experiment is to ask questions of nature, not to seek gain. Only a government can afford to be scientific, and it is the duty of both State and National to pursue science and experiment for the people.

This is realized and acted on by several states. Our own to a very limited and partial extent. Something is given to the State Horticultural Society—$100, I believe, to each county "hoss trot." I urge again that dairying should receive attention from the government because it is a branch of agriculture, and agriculture has always been regarded as the base of all wealth and prosperity. And because it is essentially an experimental business. True, we have learned a great deal. We no longer require our mothers, wives and sisters to work up the milk at home with dash churn and wash tub. But I assure you one thing. The goods they made were genuine.

They knew nothing of the use of oleomargarine or suine. No, no, Fellow Dairymen, and especially Gentlemen Manufacturers, don't flatter yourself that because you can so adroitly manipulate "trichenous," and cholera hog-fat and diseased tallow, that none but an expert can detect it, that you know it all. There remains much yet to learn. Within a month a reliable gentleman told me that a member of his family, in cutting through a roll of butter that was made not a thousand miles from here, something obstructed the passage of the knife. On investigation it proved to be a pork rind. Manufacturers need to learn to be more careful, if nothing more.

I come now to speak more specifically as to what legislation we want ; and here let me say, what perhaps I might have said in the outset, that the line of thought in this paper, thus far, and will continue to the end, is substantially the same as presented by the writer to a legislative committee at the last session of the Illinois Legislature. I was about to say that among the most important items of legislation required by the dairy interest is, in my opinion, the establishment of dairy stations.

The most satisfactory answers to questions pertaining to agriculture, in any of its departments, are the ones given by nature, and the most successful man is, as a rule, the one best able to ask questions of her. And what we ought to have is a place to ask questions. A place where the obscure and partly-known may be made clear and positive. A place where trained and careful men may study the laws and forces of nature that apply to our calling.

True, we have our National department, and many States have their State Boards of Agriculture, but while we are manufacturing and growing for millions beyond our own boundaries we have but few experimental stations of any kind, and, as far as my knowledge extends, none of the kind indicated. The old world is far in advance of us in this matter. As early as 1852 one was established at Liepsie, and in 1879 there were in successful operation 123 stations of various kinds. Some of the States are doing something in this direction, but very properly making a specialty of those things that belong to their more immediate locality. It is to be feared that while we are prideing ourselves on being the "pioneers" in the dairy business of the West, we shall wake up bye and bye to the fact that our competitors on the Northwest have gained the lead. Doubtless our institution at Champaign will suggest itself to many as being just the one to do the work desired. While it is not the province of this paper to criticize the workings of that institution, it may not be out of place to say that any one looking into the matter will be likely to find very obvious reasons why, without very radical changes, it would fail of accomplishing the end sought.

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The institution desired is no convenient contrivance for some political favorite or broken-down hack, but a place of honest hard work. Of the details I have little to offer. Suffice it to say in conclusion that it should be under the management and direction of a practical dairyman. One that knows the wants of the business and who, knowing the needs, can point out the direction in which research is to be pursued. The scientist will do the work. The two thus united will make the "station" a benefit to the whole State.

There is other work which should be done by the Legislature, and to which their attention has been called, a full account of which, and its results, or rather want of results, will doubtless be found in the report of your committee appointed for the purpose at the last annual meeting.

J. H. Bromell offered the following resolution, which was adopted:

Resolved, That the thanks of the Illinois State Dairymen's Association be tendered to the citizens of Dundee and vicinity for the very generous and hospitable entertainment that has been extended to the citizens of the State in attendance at these meetings.

R. P. McGlincy offered the following resolution, which was adopted :

Resolved, That our thanks are due and hereby tendered to the local committee, Prof. Quackenbush and his Glee Club, and to Miss Bohn and Miss Price, for their music, readings and essays, and to the Northwestern Railroad company for the reduced rates given to members, and especially in running an extra train from and to Elgin each evening during the session of the Convention.

The committee appointed to examine and report upon the dairy implements, not having time to complete their investigation before the Convention closed, were granted permission to hand their report to the Secretary for publication, which they have done as follows :

Your Committee on Dairy Utensils beg leave to make the following report : We have examined the Fairlamb cans for gathering cream, and the Cooley Creamer, represented respectively by Messrs. Wanzer and Buchanan, and find that while each has its peculiar advantages they are both well adapted to the uses for which they are intended, viz: the raising of cream in private dairies; also for gathering cream in localities where that system is in vogue, and we recommend them to the favorable consideration of all who are interested.

Respectfully submitted,
D. C. ADAMS,
D. S. JENCKS, } Committee.
B. COX.

The President appointed the following Committee on Statistics, in accordance with the resolution offered by George P. Lord : George P. Lord, Elgin ; R. P. McGlincy, Elgin ; C. C. Buell, Rock Falls.

The President returned his thanks to the members for the kindness shown him during the session of the Convention, and declared the Convention adjourned *sine die.*

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PROCEEDINGS

AGRICULTURAL
EXPERIMENT STATION.
JAN [illegible]
UNIVERSITY OF ILLINOIS.

OF THE

ILLINOIS STATE DAIRYMEN'S ASSOCIATION,

AT ITS

NINTH ANNUAL MEETING,

HELD AT

STERLING, ILLINOIS, DECEMBER 13, 14 AND 15, 1882.

PUBLISHED BY DIRECTION OF THE ASSOCIATION.

R. P. McGLINCY, SECRETARY.

The Tenth Annual Meeting will be held at DeKalb, DeKalb Co., Illinois
December 12, 13 & 14, 1883.

ELGIN, ILL.:
THE ADVOCATE PRINTING AND BOOK BINDING HOUSE.
1883.

OFFICERS FOR 1883.

PRESIDENT,

DR. JOSEPH TEFFT, ELGIN, ILL.

SECRETARY,

R. P. McGLINCY, ELGIN, ILL.

TREASURER,

J. F. COE, STERLING, ILL.

VICE-PRESIDENTS,

C. C. BUELL, Rock Falls, Illinois.

F. H. HALL, Sugar Grove, Illinois.

I. BOIES, Genoa, Illinois.

S. W. KINGSLEY, Barrington, Illinois.

J. H. BAKER, Davis Junction, Illinois.

T. H. BROOMELL, Aurora, Illinois.

H. C. EDWARDS, Dundee, Illinois.

The tenth and next annual meeting will be held at DeKalb, Illinois, December 12, 13 and 14, 1883.

U. OF I. URBANA-CHAMPAIGN

NAMES OF MEMBERS FOR 1883.

ndrews, E, J. Rockford, Ill.
ddy, G. H., running at large.
nthony, J. P., Sterling, Ill.
dams, D. C., Dundee, Ill.
arclay, D. F., Elgin, Ill.
eed, C. A., Lanark, Ill.
ush, Henry, Sterling; Ill.
osworth, I. C., Elgin, Ill.
aker, O. R., 9 State Street, Chicago.
aker, T. H., Davis Junction, Ill.
uell, C C., Rock Falls, Ill.
ullsek, R. M , Tampico, Ill.
roomell, J. H., Aurora, Ill.
achelor, A. M., Rock Falls, Ill.
achelor, R. F., Rock Falls, Ill.
ressler, Henry, Sterling, Ill.
sworth. F. S., Elgin. Ill.
lack, Lyman, Elgin, Ill.
rden, H. Lee, Elgin, Ill.
e, J. F., Coleta, Ill.
hamberlain. W., Round Grove, Ill.
lkins, D. N., Rochelle, Ill.
hoon. O. S., Belvidere, Ill.
llinson, Chas., Galva, Ill.
e, D. O., Sterling, Ill.
herry, J. G., Cedar Rapids, Iowa.
uffee & Maloney, Dixon, Ill.
urstain, J. E., Round Grove, Ill.
dson, E. W., Sterling, Ill.
llithorpe, E. S., Prophetstown, Ill.
dwards, H. C., Dundee, Ill.
rrester. A. M., Racine, Wis.
razey, Guy S., 127 Water St., N. Y. City.
ster, D. N., Sterling, Ill.
urler. H. B., DeKalb, Ill.
ault. T. A., Sterling, Ill.
ates, C. M. & Co., Rock Falls, Ill.
reen. Giles, Linden, Ill.
reen. Ray, Linden, Ill.
ilbert. J. B., Sterling. Ill.
ould, C. W., Elgin, Ill.
ostetter, W. R., Mount Carroll, Ill.
iton, J. H., Gliden, Iowa.
ines Preserving Co., 6 Market Street, Chicago.
ubbard. F. B., Sterling, Ill.
umphrey, G. B., Morrison, Ill.
ill, Wm., Prophetstown, Ill.
hn. C., Sterling, Ill.
nks, Scott, Adams, Mass.
imble, P. P., Bellows Falls, Vt.
ing. Thos. R., Morrison. Ill.
auffman, L. S., Gault, Ill.
umbard, J. G., Star Union Line, Chicago.
apham, E. V., Morrison, Ill.
Lathe, B. F., Linden, Ill.
LaRue, Geo. W., Port Byron, Ill.
Larkin, C. H., Elgin, Ill.
Lord, G. P., Elgin, Ill.
McGlincy, R. P., Elgin, Ill.
McKay, Helen, Mount Carroll, Ill.
McKay, John, Mount Carroll, Ill.
Mathews, B. J., Round Grove, Ill.
McWhorter, Tyler, Rock Falls, Ill.
Moyers, Hiram, Galt, Ill.
Morse, Ed., Dundee, Ill.
Powell, Henry, Sterling, Ill.
Palmer, J. L., Sterling, Ill.
Parker. D. J., Albany, Ill.
Potter, L. M., LaFox, Ill.
Powell, Clark, Sterling, Ill.
Powers, Elijah, Prairieville, Ill.
Parker, C. D , Garden Plain, Ill.
Pratt, Dr. W. A., Elgin, Ill.
Rutzel, Henry, Sterling, Ill.
Roger, M M., Sterling, Ill.
Reid, A. H., Philadelphia, Pa.
Ray, J. P., box 124, Sterling, Ill.
Richards, Thos. McD., Woodstock, Ill.
Strickler, Dr. D. A., Sterling, Ill.
Seavey. W. W., Prairieville, Ill.
Seers, E. H., Sterling, Ill.
Simonson. J. H., Round Grove. Ill.
Sands, J. E., Linden, Ill.
Shock. D. A., Orangeville, Ill.
Sheppard, W. H., Rock Falls, Ill.
Stone, P. C , Sterling, Ill.
Sterling. E. B., Watertown, New York.
Street, H. S., Sterling, Ill.
Sidel, Chas., Gault, Ill.
Sanborn, W. A., Sterling, Ill.
Scott, J., Rock Falls, Ill.
Terrell, A. A., Sterling, Ill.
Tefft, Dr. Joseph, Elgin, Ill.
Trumbower, M. R., V. S., Sterling, Ill.
Tefft, Thos. W., South Elgin, Ill.
Tefft, Jonathan, South Elgin, Ill.
Town, M. C , Elgin, Ill.
Vansant. N. G., Rock Falls, Ill.
VanOsdel. W. A., Sterling, Ill.
Woodcock, Albert, Sterling, Ill.
Wakeman, T., Rock Falls, Ill.
Wire, T. B., Geneva, Ohio.
Wilson, N. P., Sterling, Ill.
Wanzer. I. H., Darlington, Wis.
Wilder, F. I., 170 Lake Street, Chicago.
Wheeler. S. M., Elgin, Ill.
Wright, F. W., Elgin, Ill.
Waldron, E. D., Elgin, Ill.
Weld, S. E., Elgin, Ill.

A. S. 1854

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TRANSACTIONS.

The Ninth Annual Session of the Illinois State Dairymen's Association was lled to order in the Academy of Music in the city of Sterling, at 2:30 o'clock P. M., Wednesday, December 13, 1882, by his honor, Mayor Henry Green, who introduced on. A. A. Terrill, of Sterling, who extended to the visitors on behalf of the city a arty, cordial welcome in a neat speech. On behalf of the Association, R. P. cGlincy, Secretary, of Elgin, responded, graciously accepting hospitality of the izens extended through their representative.

The Convention was then declared open for business, and the President then livered his annual address:

ANNUAL ADDRESS OF PRESIDENT DR. JOSEPH TEFFT.

embers of the Illinois Dairymen's Association:

LADIES AND GENTLEMEN—You will please allow me, on this, the ninth annual eeting of this Association, to congratulate you upon the favorable circumstances der which we have assembled here to-day. We meet as the representatives of an ricultural industry perhaps second in importance to none other in the State of inois.

Prior to the year 1870, the dairy business in Illinois was largely if not wholly man- ed by the female part of the household, and much to their credit considering the nveniences which their liege lords saw fit to provide for them.

In 1870 the first creamery on the associated plan west of the great lakes was tablished at Elgin, and here it was that the first pound of what is known as cream- y butter was produced in the West. From this minor beginning the associated eamery system has developed into its present mammoth dimensions in this as well other Western States of this Union. The Illinois Dairymen's Association has had ry much to do with the induction of this branch of agriculture in this State. Here is that the honest farmer about to embark in the dairy business comes to discuss, d hear discussed, many things pertaining to dairy farming.

I trust I may be permitted to congratulate the dairymen of Illinois as a whole on the very superior quality of their goods, and especially so of their creamery tter, which is known and appreciated by most, if not the entire civilized nations of e globe. The fine quality and nutty flavor of this butter must have convinced long this, those people who were so sanguine, hardly a dozen years ago, that this State, ile a great cereal producing State, could never produce a quality of butter equal to at made on the mountain ranges and hill sides of the Eastern States.

Only a few years ago it was claimed by many, and firmly believed by not a few, at the States in and along the great Mississippi Valley could not raise the grasses table for the cow for butter-making purposes. How effectually has this question en settled in far less than a score of years to the full satisfaction of all reasonable nds who have given this subject a thought. The State of Illinois is now credited th about one-fourteenth of the entire production of butter and cheese in the United ates. By the census of 1880, as reported by Mr. J. R. Dodge, statistician of the tional Agricultural Department at Washington, and published by Mr. J. H. Reall, New York city, this State is second only to that of New York in the number of ws owned by her inhabitants. New York having, in 1880, 1,437,855 cows, while Illi- is had 865,913; Iowa came next with 854,187, and Pennsylvania being fourth on the

list with 854,156. The whole number in the United States for the same time bei
12,580.907.

The increase of cows in the State of New York for the decade prior to 1880, w
87,194, while for the same time it was 225,592 in this State. Taking the same ratio
annual increase for the last two years and it would give Illinois to-day 911,031 co
In a speech by the Hon. H. G. Davis, of West Virginia, in the Senate of the Unit
States in 1879, in speaking of butter and cheese, he says "this is an important far
ing and agricultural interest which has not hitherto attracted the attention it deserv
and one that is fast growing in our country. It is estimated that last year (1878) t
total production of cheese was 350,000,000 pounds, and of butter 1,500,000,000 pound
estimated value of both being about $350,000,000. This is the contribution of the wh
country, and is the leading agricultural interest next to corn, which for the same ye
was, in total value, $480.643,000. The wheat crop for the same year being valued
$300,696.000, and the cotton $215,000,000."

Mr. X. A. Willard, formerly of Little Falls, N. Y., a gentleman well posted
dairy matters in this country (but who, I regret to say, now sleeps in the silent grav
in a letter to Dr. A. S. Heath of New York city, dated December 30, 1880, says th
the total annual value of all the items in 1875 from the dairy farmers of the State
think will figure more than $100,000,000, to say nothing of the surplus hay and gra
raised and sold by the dairymen of the State. The dairymen as a class are the be
educated in their business, as well as the most enterprising of any class of farmers
the State.

Now assuming that the foregoing statement of Mr. Willard is correct, and taki
that, together with the relative number of dairy cows in this State as compared wi
that of New York, it would give to Illinois in 1880 a total value of $60.215,598, and
1882 in round numbers over $75,000,000 from all the items of the dairy farmers. The
figures look large for an industry inaugurated only about a dozen years ago. But
you will please figure the milk produced by those 911,031 cows on an average of t
cents per gallon, you will find it alone will reach the snug sum of about $50,000,0
If this be correct then the above statement is not an over-estimate for all the items
the dairy farmers of Illinois for 1882.

In giving the above I do not wish to mislead any one. The dairymen have ma
drawbacks, and have to watch their bank accounts closely in order to figure a gai
He has many bills to pay promptly, and first of all is that to the cow of his dairy, s
never trusts, but must have full pay twice every day or the lacteal fluid will cease
flow.

Any man or men wishing to embark in the dairy business should quietly sit do
and figure the cost with profit or loss before he enters the arena of the dairy circ
The question has often been asked: "What interests have the people of the southe
portion of this State in dairy farming?" Well, let us see. It is a well demonstra
fact that the cow of the dairy only lasts about six or eight years. Now to keep up t
supply of the dairy requires the annual raising of over 100,000 cows. If breeds suitab
for the dairy were sought and raised in the southern portion of the State they cou
readily be sold to dairymen who heretofore have obtained their supply largely fro
Wisconsin, Iowa and Missouri. Each of these States are now largely engaged in t
dairy business themselves, and will require all their cows to keep up the supply
their districts, and Illinois will have to look elsewhere in the future for her supply.

Then again in the dairy districts of the State there is not a sufficient amount
wheat raised to bread the people, therefore the supply must be drawn from other se
tions. And of other cereals not enough is raised to feed the stock, consequently lar
amounts of bran are annually purchased in Minnesota and elsewhere for the use
the dairies in this State. This bran mixed with corn meal makes very good food f
milch cows, but not equal to corn and oats ground together. The southern portion
this State raises vast amounts of both these cereals, which ought to be used in h
dairy districts, thereby creating a home market for the same, which is usually if n
invariably the best market for the farmer.

A few dairymen in this State have conceived the idea that dairy farming is bein
overdone in the United States and especially so in this State. These individuals stan
aloof from dairy conventions, and do not favor publications on the subject which ma
tend to instruct others in this branch of agriculture. This, to my mind, is a narro
selfish view, fit only to be harbored in the brain of a barbarous or half-civilized com
munity. This is virtually lighting the taper and placing it under the bushel.

Great is the man who conceives an idea of lasting benefit, but far nobler is he wh
conceives an idea of vast importance to the human family, and places it in such
situation that all who choose may profit by it. Suppose for instance that our pr
genitors (whether man, monkey, or owl) and their descendants, down to the prese
generation, had suppressed all their thoughts within the cranium where lay the brai
that originated them, what would be the state of advancement of the civilized wor
at the present time?

Now if the dairy business for the last decade has been overdone I, as a dairyman, uld be pleased to have it continue so to be in the future.

By information I learn that the lowest price of butter on the Elgin Board of Trade s year was twenty cents per pound, and the highest price reached, December 11, s forty-two and a quarter cents per pound, while in 1870, or twelve years ago, before establishment of the present creamery system in this State, it ranged from eight twenty cents per pound. This does not look much like over-production.

For the eight months prior to August 31, 1882, the total exportation of butter from United States was only 4,728,121 pounds, while for the same time last year it was 407,698 pounds. That of cheese fell of 22,588,498 pounds for same time. This ows a decline in the exportation of butter for the eight months prior to August 31st, ,679,597 pounds.

The exportation of dairy products for October of the present year is only about -half of that for the same time one year ago. Now while the export trade of the sent year has largely fallen off, the manufacture of dairy products for the same e has very much increased, yet there is no decline in prices at the present time in s State's productions. And why not? simply because the average American loves d butter on his bread.

Since we have got to producing a prime article of butter in this country, the connption has largely increased, until we have had conferred upon us the name of ng the greatest butter as well as sugar eaters in the wide world.

Some few years ago it was reported that England consumed about four and a half unds of butter per capita, while the United States used about fourteen and a half unds per capita per annum.

Assuming that the foregoing figures given by the honorable gentleman from West ginia are correct, and allowing no increase in the amount of production in the ited States since 1878 (which is not the case by any means), we shall have left, after lucting the 7.092,181 pounds (the estimated exportation for this year), 1,492,907,819 unds of butter to be divided between the 50,000,000 people in this country. If ured on this basis it will give about thirty pounds of butter per capita as the connption for 1882 in the United States. These figures are entirely exclusive of the omargarine and suine which are said to be used to some extent in this country. is will be a fraction over one and a quarter ounces per day per capita.

Mr. Willard, as above noticed, said that dairymen of New York were the best icated in their business of any class of farmers. I fully believe this will hold true Illinois as well as in New York. I account for it in this way: Dairymen meet ne of their fellow dairymen every working day in the year, and frequently talk ether more or less about their business. This not unfrequently calls out new ideas, l as thought begets thought, each may profit by what the other advances. Farmers a general rule are far too reticent. As a class they rarely meet their brother farmin social converse. Not unfrequently they rise at early morn and drive through day as though their very lives depended upon doing just so much that day.

The farm should never be so managed as to occupy all of the husbandman's leisure urs. He should so manage as to have time for mental improvement of himself and nily by newspapers, books and social meetings with his fellow-man. He is placed e as a social being to enjoy the sunny side of a short life. Should his acquisitives be so great as to absorb all his finer mental powers, he will bend every nerve to ain more than a sufficiency or more than he will be likely to use during his short ourn here below.

Now in conclusion, please allow me to say to the farmer, the dairyman and the iculturist, it was your forefathers that secured the independence of this Nation. is you who will have to stand by the flag in all great emergencies. It is you who duce the real wealth of the country. And without you, or some one else to fill ur place, the Nation could hardly live a twelvemonth. Then how important it is t you study well your every act.

Do not spend your hard earnings in the courts or to fee their attaches, but save m to educate and make happy your good sons and daughters. Give to them that ral, honest and needful education which will fit them for a useful and happy life.

Do not educate them to think or believe that a farmer's life is degrading to any nest man or woman. But on the contrary, that it is the noblest of professions, one which all other professions have to bow. It is a profession self-sustaining and lifeserving. One that has been downtrodden in this country because those engaged t have quietly traveled on in silence.

It is now time for the agriculturist of this country to rise and say to the balance the people that we laid the corner stone of this great Republic, and have done ch to sustain it, and henceforth the programme must be changed, and you bow knee to us instead of us to you as heretofore.

The topics on the programme were then taken up as follows:

SEEDING FOR GRASS; THE BEST WAY TO DO IT.

BY S. N. BAIRD, STERLING, ILL.

There are no doubt others here better qualified to give information on this subject than myself; but as I have been placed upon the programme, will give my experience on seeding for grass.

It is a well-established fact that in this part of the great West corn and grass ar the crops from which we derive the most money. Small grain of most kinds has become very uncertain. A good crop of wheat in this part of the West is almost out c the question. Barley, too, is very uncertain, and I find that our rich lands, afte being grassed and pastured a few years, are too strong for oats. They are apt to g down before the heads are filled, and consequently fill light. Rye seems to be th surest crop of the small grains. But the price of rye is usually low, and it alway appeared to me that we do a great deal of work for the money we get for the crop unless we are near a paper mill and can sell the straw—though selling straw is a thin I do not advise a farmer to do. However, we must sow some kind of small grain i order to seed for grass. Timothy does well sowed alone. I think the surest way t get a good stand of timothy is to plow the ground lightly soon after harvest and so timothy seed alone. This is very sure, and you will get a fair crop of hay from it th next year. Another good and sure way to get land well seeded with timothy is to so in the fall with rye; while you will not get a crop of hay the next year, it will mak good pasture after the rye is harvested. Some have sowed clover seed with rye in th fall, with excellent results. I have never tried this method but think it worth a trial as rye makes a good protection for the grass through the winter.

Timothy and clover both do well sowed on the rye early in the spring. I think have never failed of success in sowing in this manner. Barley is also a good crop t sow grass seed with. Wheat is not so sure, and it seldom does well when sown wit oats. Timothy often does well when sown immediately after harvest, on stubbl either with or without harrowing. The fall rains give it a good start and the stubbl protects the young grass during the winter.

When sowing grass seed with grain, I mix the seed and grain before sowing, an sow all together with broadcast seeder. I harrow the ground once before sowing an at least twice after sowing. This works well, and is a saving of time and labor which is an object to the farmer in seed time. My method when I sow in this way i to measure or weigh the grain I wish to sow on six or eight acres, and the quantit of grass seed I want on the same, and mix well. In seeding for pasture or hay, think one-third clover and two-thirds timothy is a good mixture, and if my objec were to enrich the land, would sow all clover. Would recommend to sow from six t eight quarts of grass seed to the acre and have the land in good condition when sown

Nothing is said in the programme about seeding to weeds and how to do it. don't feel like closing my paper without saying something about seeding to weeds an how *not* to do it. We need have no care about seeding to weeds, as they do tha themselves. We have a good soil and climate for the growth of weeds, and I an sorry to say that many of our farmers make but little effort to keep them in check Of course we have many kinds of weeds that we cannot subdue, but the kinds calle noxious weeds generally spread slowly and we can keep most of them in check if w take them in time. The cockle-burr is a bad weed if you let it have its way, yet i taken in time is not hard to subdue. I have hardly any on my farm. My plan ha always been to stop whenever and wherever I see one, and pull it up and cast it int the fire, root and branch, seed and all. We always have some matches in our pocket when picking corn, and when we find a burr or a patch of them we pull some husk and make a bonfire and put every stock and burr we can find on the heap and burn them then and there. My boys say they did not find one burr the past fall in picking one hundred and twenty acres of corn. This is but little trouble if taken in time—a stitch in time truly saves nine in this case. The wild morning-glory is a troublesome weed. It can be destroyed by frequent plowing in dry weather, or let hogs run where it grows and they will take it out root and branch. The Canada thistle I know but little about, as we have not got it here yet. But we have a weed here called by various names, which is slowly but surely spreading all over our fair land. The proper name for this weed is Indian mallow, but is called by some velvet weed; by others butter print, because the pod that contains the seed looks like a butter print; others call it button-weed, chip-weed, etc. This weed will sometimes grow as tall as the corn. It grows rankest in the cornfield, but it thrives in any place where the ground is loose. This weed has a large leaf. It emits a disagreeable, sickening odor. The seeds are small and black, being contained in a pod, which opens in the fall, and the seeds fall out. The seed is oily, like clover seed, and will germinate after lying in the round for years. I have some of these weeds in one of my fields, and have been ying to subdue them for the past twelve years, and in spite of all I can do they ain on me. They will grow up after the corn is laid by or even after harvest, nd though they only attain a height of six or eight inches, the seed matures and inreases a hundred fold. I assure my brother farmer that when this weed comes on is farm it comes to stay. Another nuisance which is slowly spreading is the rasperry. We all want raspberries and blackberries for table use, though I would rather o without them all my life than have them growing all along my hedges, as they will o if left alone to gradually spread into the fields and roads. Birds like the berries, nd will scatter the seed for you without money and without price.

I have said more on this weed subject than I intended, but not half as much as would like to say if my warning would be a benefit to the farmers of this rich and eautiful country.

SEEDING FOR GRASS; THE BEST WAY TO DO IT.

BY O. S. COHOON, OF BELVIDERE, ILL.

Allow me to remark, as I have said many times before, that the old adage (handed own from time immemorial) is a true one which says that "the man who made two lades of grass grow in the place of one, is a benefactor to his race."

Seeding for grass; the best way to do it.—The court of inquiry has asked me, as ne of its witnesses, to answer this question. At first thought the casual observer of gricultural science or one of those of the farming persuasion who did not think that griculture had any science connected therewith, would say that there could be but ttle said upon this subject. If the question had been raised in this manner: "Seedng to grass for hay," the answer might have been somewhat limited; or it could ave been answered in this way: "The best way to do it" is to do it well. When we nlarge upon this subject, that answer will be the keynote to all of our answers.

Do it good—do it well,—decently and in order. Sometimes we think we can tell hat we don't believe or how not to do, more easily than what we do believe and how o do. The mistakes of my life are many, and I see them more and more; and they ave been quite as many in seeding for grass as in any other part of my farming pracice. While Webster's Unabridged and the botanists say that grass is an herbage, inluding wheat, oats, barley, rye, timothy, etc., but does not include clover. And my ld Walker's dictionary says that grass is the common herbage of the field, on which attle feed,—which will include clover. And thus this question will be so large that o tell you the best way to seed for grass will be quite improbable. And furthermore, o show you that this is not one-half the size of this question, I will read you a word f what George Vasey, botanist of the Agricultural Bureau, reports to the Commisioner of Agriculture in the year 1880:

"SIR:—In continuation of our report on the native and naturalized grasses, we resent figures and descriptions of twenty-five species which have more or less value n agriculture.

"The object of these articles is to call the attention of farmers and agriculturists o the great variety of grasses existing, and by means of minute description and figres, to enable them to recognize such species as may come under their observation. he system of grass culture in this country is undoubtedly capable of improvement, ot only in the adaptation of the proper species to different climates and soils, but in he advantages to be gained by a more diversified use of several in the same field."

I would here state that the same botanist in 1879 reported twenty-five other speies of grasses, and for all I know may keep on for years to come.

Now as grass includes an indifferent, indefinite, countless number, I shall confine yself mostly to three or four kinds that I am most familiar with. First, then, timthy, or herds'-grass, or in Dutch, *phleum prutense*, is one of the most common, perfect nd hardy grasses known. For hay it has no superior, for grass and pastures it has o equal; to mow, rake, load with a loader, unload with a hay-fork, and for ease of uring. both in the barn and out of doors, it is simply superb. With well-defined rinciples in seeding for grass, it is very sure of a catch.

As I have said before, the mistakes of my life have been many, both in seeding or grass and many other things, and since I see them more and more, I have learned y some costly experience to very cautious and try to do my work well—extremely ell in seeding for grass.

First, then, the plain, simple, unvarnished fact is: The ground must be well preared—be made in fine condition. This means much: Well plowed, well pulverzed, well harrowed, well *scrubbed.* Now this word we have invented, as we do not nd it in Webster's Unabridged. But it has suited us a little better than the word scrape." Now we have our land in fine condition for seeding. No! One thing ore we want you to have. Be sure of this if possible: Good, nice, dry weather, early in the spring,—very early if you please. Then sow your wheat, oats or barley, flax o spring rye—whichever you please. And now comes a very special point, I believe,— one of very great importance, and that is, sow your grass seed on the *very same da* you do your *grain.* My experience has taught me that grass seed wants an even start with your grain. This being done with the above and the following well defined rules, the mistakes of your life will be less.

Drag or scrape the ground lightly after seeding for grass. I need not put in that word "lightly." I had better say finely, for there is but little danger of doing too much. And here is one more mistake of my life in seeding for grass, and many other men to my certain knowledge have done the same thing over and over again. That is, *careless* sowing. Grass seed is very small and light seed. If sown by hand, or even by machinery, the wind has a great tendency to detract it from its proper place upon the ground, therefore leaving it very streaked—some places with scarcely any seed, while other places will have double the amount required. This is extremely easy to happen when sown by hand. The greatest fault practiced in sowing by hand is in sowing too wide, or in trying to sow too wide. Better sow narrow throughs with extreme care when sowing by hand. When sowing by machinery much depends upon its being well adjusted for its work. This is one of the important factors in seeding for grass. "The best way to do it." Do it well.

One thing more—a question that will probably be hard to settle. That is, the amount of seed to be sown to the acre. The different localities, circumstances, conditions and wants of each and every man makes this question more and more unsettled. The man, in our opinion, who wants to seed for the purpose of raising timothy or clover or other grass, for the purpose of raising seed therefrom, will need to sow less seed than he who seeds for pasture or hay. The old lady who had one of the best recipes for making the best cake in the world, will come as near this question as will generally be agreed upon. Her recipe as near as I can remember it, was like this: "Take some flour, a little pinch of salt, a small amount of lard, just enough soda, and cut the pieces according to the company you have." If I knew just how much seed of each kind to sow to the acre to suit each and every man, I would tell you. I hope to learn before I leave this convention. But there is one point in seeding for grass for pasture, upon which I have decided convictions. That is this: Seed for hay rather thickly, and mow for two years, and pasture in the fall after hay harvest only, and that very lightly. I would also let hay get quite ripe before cutting. For getting best results for pasture, I mean permanent pasture, after land has been broken and tilled for a term of years. I have other decided convictions as to the best—the very best way to seed for pasture in many—very many cases. That is, to drain your land well, and never break it up. That is, *hardly ever.*

The sweetest, the best, the most pasture is obtained from the native sod, tamed by long continued pasturing, other things being equal. And, as I said before, good drainage is one of those requisites.

And now brother farmers, the grass crop, whether in its green, succulent state or in its dried form of hay, is of momentous value—one of the most important factors of our farm products. And certainly the man who makes two blades of grass grow in place of one, or doubles this valuable crop of his farm, and teaches others to do it, is and must be a great benefactor of his race. And as to the general average of the whole country, this can be easily done; not by what I and others can tell you alone, but by doing many, very many things that you and I know how to do now.

As to various other grasses of whatever kinds we may wish to cultivate, the process in detail for the best way to do it, is very nearly the same. There are many more practical matters of very large moment in this seeding for grass. You and I know it. Will we do it? Do we do it? That is this: *Make—save; save your manure.* Make it early; make it late. Save it early; save it all the time, and use it upon your grass. That is the best way to do it. No! There is more to be done to make it the best way. The quality of no kind of grass is good of its kind, grown in cold, wet, sour land. Drainage, then, will be one more important factor in seeding for grass, and this is one of the best ways to do it.

Last week the dairymen of Wisconsin and other states held a convention at Milwaukee, in which it is reported, per Chicago *Tribune*, that Brother Jonathan Perriam, of Illinois, was called upon to talk about grass, and it was said that he discoursed about as follows: "That the Good Book affirmed that 'all flesh is grass,' but it is nowhere found that all grass would make flesh, and it would not. Many intelligent people thought everything eaten by cattle or herbivorous animals was grass, but such was not the case. Clover and pea-vines were not grasses, but all grains, including corn, sorghum and sugar cane, and the alternate leaved plants, only excepting buckwheat, were grass. He said the grain farmer cared little about grasses for feed, and that beef could be made from coarser grasses than could dairy products. He though it a mistaken idea that because a grass was good in England it would be good here. There were in reality only one hay grass and three pasture grasses, and those would grow anywhere they could take root. Red-top was the best cow grass, and timothy the best hay grass. But the foundation of all pasture was the blue grass, sometimes called English blue grass, but in reality indigenous all over the United States. He urged a great variety of grasses in pasture, in order that it might be good at all seasons.

It is evident in our minds that Mr. Perriam meant when all grass would not make flesh that it was when it was grown upon cold, sour, moldy land.

On December 9 I received the following per postal card from the Hon. L. W. Lawrence:

"DEAR SIR:—Ill health is my excuse for not answering yours. I can only say that after trying everything, I have fallen back on clover and timothy for rotation, and blue grass for permanent pasture."

THE GRASSES.

BY PROF. W. J. BURDICK, LAKE MILLS, WIS.

A very brief glance at the vegetable kingdom will convince us of the vast importance of the grasses to the whole family of man. A more minute and careful survey of this great field of observation will make us wonder that the agricultural world has been content for so many generations to remain in so much ignorance of their nature and properties. All of us without exception derive a great deal of pleasure from contemplating the beauty of the grass; "a thing of beauty" it "is a joy forever." It exhilarates alike the prince and the peasant, the poet and the philosopher, the merchant and the mechanic, and cheers and gladdens all classes and conditions of men. Destroy the rich meadows and pastures of our farms, and how much of the pleasure as well as of the profit of the farmer's life would be blasted! Remove the little green grass plat from the contracted yard of a citizen, and how much the enjoyment of his domestic life would be narrowed! When the prophet Isaiah would express the very extremity of desolation he exclaimed, "The grass faileth; there is no green thing!" While the grasses gratify the vision of all classes of mankind their greatest charms are reserved for those who study them most persistently, and who observe with careful scrutiny all the minute details of their organization. These alone can appreciate the exquisite grace and harmony of their forms and motions, and the wonderful adaptations of their structure to the emergencies of their position, and to the welfare of man. These alone can descry the marvelous uniformity of their plan exhibited in the widest diversity of structure which attests the touch of the Divine hand in their organization compelling them reverently to adopt the grateful exclamation of the psalmist: "Oh Lord, how manifold are thy works; in wisdom hast thou made them all; the whole earth is full of thy riches."

The latest and most certain conclusions of science coincide with the Apostle's statement that "all flesh is grass." They demonstrate, most conclusively, that in this saying he yields to no mere poetic fancy, but gives utterance to a sober and unvarnished fact. The elegant contour of the human form—the ear that drinks in the melody of song, the tongue that expresses the utterances of the soul, the sparkling eye, the ruby lip, and every portion of our material form, views its origin either mediately or immediately in the grasses of the field. It is their function to gather and combine the scattered elements of inorganic matter in such proportions and forms as are best calculated to build up all the tissues which are essential for the manifestations of animal life. They extract saline ingredients from the rocks, hydrogen and oxygen from the rains and dews, carbon and nitrogen from the soil and atmosphere, and mingling these together by a subtle and mysterious chemistry which man can never imitate, they lay their treasures at his feet in a form exactly fitted for his purpose. Very precious is the promise of the Infinite, "I will send grass into thy field for thy cattle that thou mayest eat and be full."

Notice the wide diffusion of grasses. While the fig, the orange, the bread-fruit tree, the vine and most of the other productions of the vegetable kingdom are restricted to their belts of latitude, the grasses flourish in every region of the earth. They spring up spontaneously on the plain, on the mountain, and in the valleys by the water-courses. They unfold their graceful panicles beneath the dull leaden skies of the arctic region, they adorn the temperate zones with their refreshing verdure, while beneath the ardent skies of torrid climes their culms swell out into almost gigantic proportions, vying in some of their varieties with the trees of a more northern region. Their leaves and culms furnish food for cattle; the seeds of inferior species furnish food for birds, while those of superior species furnish nutriment for man himself. The importance of the grasses is shown in the relation which they bear numerically to the total vegetation of the earth. At least one-sixth of the plants that grow upon our planet belong to this family. Two hundred and thirty genera embracing six thousand distinct species are known to botanists, and new genera and species are constantly revealed to us by the reports of travelers and the researches of domestic observers.

Two hundred and fifteen distinct species of grasses are capable of being cultivated i Great Britain. and one hundred and thirty-three are proved to be indigenous on tha island. Mr. Flint describes one hundred and twenty-one varieties as growing in th State of Massachusetts. Prof. Torrey in the "Natural History of New York" d scribes forty varieties of the genus *Poa*, twenty-seven of the genus *Agrostis*, a tot for the State of one hundred and twenty-five varieties. A report and description o the varieties growing in that State will be found in the Transactions of the Stat Agricultural Society for the year 1853, reported by Prof. Lapham.

This wide diffusion of the grasses is due in some degree to the care which natu takes for their production and protection. The seeds of some varieties are provide with hooks, by which they attach themselves to the hair and wool of grazing animal and to the clothes of man, by which they are transported to regions widely remot from their origin. Their seeds, which form the favorite food for many birds, ar retained in their stomachs, and carried many hundreds of miles before they are voided they then germinate under favorable circumstances, and thus the grasses of wide remote regions are interchanged. The seeds are very light and highly polished, whic fits them for diffusion through wide areas by the combined agencies of the winds o winter, and the frozen snows. Many of them are furnished with rhizomas or creepin roots, which send forth many shoots and rapidly cover the ground where a singl stem has once effected a lodgement. The annual decay of the stems afford a constan supply of food for the successive growths of the plant. Nature has also provided fo their protection after their establishment, in various ways. A large proportion of th species are perennials; they are uninjured by cropping and the laceration of thei herbage, which is soon replaced by the internal energies of the plant; indeed, thi very laceration, which would utterly destroy many families of plants, is really necessary for the most vigorous growth of many species of grass, and is essential to thei continuance on sandy soil. The creeping roots, though bruised and torn by the heav tread of cattle, are not injured, and the winter's cold and summer's heat are alik unable to extinguish the principle of life within.

Now let us consider the early attempts at improving the grasses and grass lands Down to a comparatively recent period, no attempts were made in England fo the improvement of grass land. The only thing the husbandman did for them, was t let them severely alone. Mr. Sinclair tells us that "the first mention that is made o rag or rye grass in the early books of British husbandry, is in the "Mystery of Husbandry," discovered and laid open, by J. Warlide, A. D 1681. In this work he speak in this wise: "Rag grass (*lolium perenne*), by which they improve any cold, sour clay weeping land, which is unfit for sanfoin, (*Hedysarum onobrychis*), hath the precedenc of all other grasses." Then there are lucern (*Medicago sativa*), clover, (*trifoleum pratense*), tares (*vechia sativa*), spurry (*spuergula arvensis*), and trefoil (*lotus corniculatus*) which includes all the forage plants that he enumerates. His account of the ra grass concludes as follows: "Four acres of this grass hath yielded twenty quarters o seed and fourteen loads of fodder, besides the spring and autumn whereon six or eigh cattle usually grazed." At this time the only species of grass ever sown artificially was the rag grass, and its culture had only then commenced. From this beginning rag grass gradually spread over the whole kingdom, and ever since has maintained its high reputation. It continued to be the sole grass sown until the close of the American revolution, when timothy seed was introduced by the returning soldiers from this country, A. D. 1776 to 1780. Orchard grass (*dactylis glomeraea*), began to be introduced about the same time. Since that period the number of varieties under cultivation has steadily increased. The publication of the "*Hortus Gramincus Woburnensis*," under the patronage of the Duke of Bedford, caused a great improvement in the management of grass lands, and shed a flood of light upon the management of meadows and pastures in England, although its author proceeded upon erroneous principles in determining the relative nutritive values of the different species of grass.

The making of artificial meadows began to receive attention even from the first settlement of this country. In a work written by Jared Elliott, in 1747, the cultivation of timothy and fowl meadow (*Poa serotina*), is very strongly recommended. The latter grass is especially lauded as in many respects better than any other. Timothy and red top were sown very extensively, and sea weeds, and fish were successfully used as manures. Although we were thus early in forming artificial meadows and pastures, our subsequent improvement has not kept pace with our early enterprise, and we are far behind England and Scotland in this department of husbandry.

Let us now turn our attention to the economical importance of the grasses. We have means of ascertaining with precision what are the proportional areas of the pastures and meadows of Wisconsin. We know that in the State of New York the proportion is 1.35 acres of pasture to one acre of meadow, and the total areas of improved land is to the total areas of grass land as 1.46 to one. This proportion will hold good for the Eastern and Middle States in relation to the areas of grass land, but in Western States I find that the statistics do not agree in their ratios, as some of them give

acres of pasture to one of meadow; others give two acres of pasture to one of
eadow.

“We find the cured hay crop, as represented to be, for the year 1880, 31,925,233
ns; cash value, $371,811,084; average price per ton, $11.25. Number acres of
eadow, 25,863,955; average yield per acre, 1 23 tons; average cash value of product
r acre, $14.38.”

We shall perceive that in making two blades of grass grow where but one grew
fore, is equivalent to increasing the cured hay crop of the United States to the value
$743,622,168 at the same price per ton.

The vast increase of manures (if fed on the farms), which will result from the
nsumption of this augmentation of the herbage grasses must wonderfully increase
e productions of the cereals. Millions of dollars will be thus added to our income.
e influence of grass culture on the growth of the cereals is very strikingly exempli-
d by a comparison of the agricultural statistics of France and England. France
s 53 per cent. of its cultivated area under cereal cultivation, while England has but
per cent. Those who read this statement for the first time will be surprised to
rn that, notwithstanding this disparity between the areas of the grain lands in the
o countries, England produced five and one-ninth bushels of grain for every indi-
dual of her population, while France only produced five and a half bushels for every
dividual of hers. Thus with less than one-half of the proportional area under
ltivation, England produces within seven-eighteenth of a bushel per head of what
ance does.

She is enabled to accomplish this result solely in consequence of the manure fur-
shed by her grass lands. Every acre of English grain land receives the manure
om three acres of grass land, while in France the manure from each acre of grass
d is spread over two and a half acres of grain land. In other words, one acre of
ain land in England gets fifteen times more manure than one acre of grain land in
ance. This statement tells the whole story, and assures us that a like increase of
nure would produce a like increase of crops with us. There are many other inci-
ntal profits which will arise from the increase of our crops.

Is the doubling of our crop of grass possible? It may be said—and doubtless by
ry many farmers—that to talk of the doubling of the crops of grass may be very
ell to “adorn a tale,” but that it is quite impossible to accomplish it practically.
ey assert that the idea is a “castle in Spain”; a product of Utopia; an *ignus fatuus*
ich only bewilders and blinds. I believe, on the contrary, that it is perfectly prac-
able, not only to double, but to treble and even quadruple our present production
grass, and I hope to bring our farming friends to the same conclusion. What has
en done once can be done again when the circumstances under which it is done are
nilar. Like causes produce like effects, and what one man has accomplished an-
her man can also, if he brings to the task the same tact and energy and skill. We
ow that many farmers have cut two to three tons of hay from each acre of their
eadows; other farmers have cut six or seven from an acre. From the irrigated
eadows near Edinburgh twenty tons have been taken per acre at six several cuttings
the same season. If other men bring the same set of causes into operation, why
ould they not obtain the same results? That the enormous disparity existing be-
een the grass crops raised by different farmers in the same county and in different
unties in the same state is not due to irremediable differences of soil and climate,
t to the skill or want of skill brought to bear upon the management of the grass
d, is made very clear by an experimentation of the facts as as they exist. This
int we will review in the discussion of the various systems for grass land culture
be considered in these papers.

What are the causes of the inferiority of our meadows? The main reason for
eir inferior condition is, that very few farmers ever try to improve them. It will
t be denied that farmers in general bestow much less care, or thought, or study, or
bor, upon their meadows than they do upon their grain lands. Grass is grass, and
at is all they trouble themselves to know. Very many farmers are not aware that
ey have any other varieties than timothy, clover (which is not a grass) and red top
owing on their farms, although they may have a dozen or twenty other species.
uch less do they understand the peculiar properties and the relative value of the
fferent species. The careless farmer goes on to his meadow when the proper season
mes, and cuts his grass and converts it into hay; this being accomplished, he thinks
more about it until the corresponding season of the ensuing year, when he goes
rough the same routine again. In consequence of this apathetic spirit he gives
mself no trouble to re-seed his meadow or to manure it, or to irrigate it, or to drain
or to prevent it from being poached by the cattle in autumn or in winter. Even
en first forming their meadows after tillage, there are very many farmers who
ver sow any grass seed upon their lands at all, leaving it wholly to the birds and
e winds and the waters to supply the necessary seed. In some of the states west of
this plan is the rule, not the exception. Among those who really sow grasses on
e land intended for meadow, very few sow any other seed than timothy and clover,

and seem to think that when they have committed these few seeds to the bosom
the earth, they have done all that man can do, forgetting that in the fine old meado
in England—which are the envy of farmers elsewhere, and the admiration of t
world—not less than thirty different species are found growing in a single sod, ar
1,100 plants in one foot of surface, while the American seeding will average 175 plan
grown in the same area of surface.

There is another cause for the inferiority of our meadows, which, though oft
overlooked, is of great importance. This is the number of useless or noxious wee
that find place among them. We fear if very many meadows in many sections
this state were carefully examined, it would be found that at least one-third of t
plants growing in them were weeds of no intrinsic value, which are unnutritious a
unpal table to the stock, and injurious to the flavor of the butter and beef. The
foreign intruders injure the useful plants by their shade, and rob their roots of t
nutriment existing in the soil. If the farmers of this state would rid themselves
this nuisance in their grass land, it would add millions of dollars to their incom
We have seen that there are 6,000 separate species of grass, and we know from t
analogies of nature as well as from revelation, that God made nothing in vain. Ea
species has some special niche, some separate part to play in the grand harmony
nature, each adapted for some purpose, or for some soil, or climate, or locality; an
yet with the exception of some thirty varieties we are quite unacquainted with the
special uses and adaptations. The worst of all is that we are contented with this la
of knowledge; we make no effort to dispel it. Last fall when engaged in profession
work, I noticed a tract of lyme grass (*Elymus striatus*), growing on a bank of a riv
let, and asked the owner of the land, who had lived on it more than twenty yea
whether his cattle relished it. He said that he did not know; he had never noticed
and could not tell whether the cattle would eat it or not. He said it had grown the
all the time since he had moved on the farm, but never knew its name or what it w
good for. He had never even thought whether it had a name or a use. Meadow fe
cue is a very common grass in counties bordering on the Hudson river, constituti
about one-fifteenth of the crop on the meadows. This very valuable species of gras
I found growing in Jefferson county, Wisconsin, and while engaged in selecti
specimens I asked five or six farmers to name it. Not one of them could tell its co
rect name, although they had often seen it growing on their farms.

It is well established, and the farmer will readily acknowledge, that among t
few grasses that we know anything about, there is a great difference in their nutriti
value. This acknowledgment, however, is made in general terms; but when they a
asked to specify the most nutritious kinds there will be as wide a difference of opinio
as possible. Some will tell you there is nothing like timothy; others declare th
orchard grass is the grazier's sheet anchor; others cannot make good sweet butt
without red top; a Kentuckian will claim supremacy for his favorite blue grass
many New Englanders claim fowl meadow as the king of grasses; while in Old En
land the primary place is given without hesitation to rag grass. In some parts of t
State of Maine, nothing is thought to approach meadow fox-tail.

This Babel-like confusion of opinion demonstrates clearly enough that we hav
no knowledge on this all-important subject, and that we rely only upon capricio
opinions for the settlement of the problem. Chemistry, it is true, has offered its a
to us. Analyses of some thirty species have carefully been made. No doubt b
these analyses are accurate and correct and reliable. No doubt they tell us truly wh
they alone profess to tell, viz.: the exact amount of nutritive matter in a given sampl
But this, unfortunately, is not a reliable guide in practical feeding. No matter ho
much nutritive matter there may be in grass if there are mechanical impediment
such as an abundance of stiff awns to obstruct its reception into the stomach, or
the nutritive matters contained in it do not exist in such a state as to permit the
assimilation by the digestive organs, or if they are mingled with injurious or poiso
ous matters, they might as well not exist at all, as they will make neither meat, n
milk, nor wool. There are other ambiguities in the result of chemical analyses a
applied to grasses. The composition of timothy, for example, is different when grow
on a sandy soil from what it is when grown on a peaty soil, and this latter conditio
varies greatly again from what it is when grown on a clay or loam; so, if it is grow
in a very wet season, it is very different from the sample grown in a dry season.
sample grown upon the sea coast will widely differ from one grown in the interio
The same plant, if analyzed when it is going into flower, and again when it is goi
out of flower, will be found to present as wide differences as though they were plan
of different species. We must not be understood as undervaluing the chemical ana
ysis of the grasses. On the contrary, we place the highest value on them and hearti
wish that we had more of them. In order to make them available for the purposes
the grazier something more is needed, and that is actual trial at the manger, of equ
weights of the grasses to be compared, and finding by accurate weighing which
capable of putting the most meat on an animal. The scales and the price current w
then settle the question of their comparative value conclusively. We have sought f

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ch experiments in all the libraries to which we could obtain access, but have sought vain. If there is a single reliable experiment having for its object the determina- on of this vital question it has escaped our vigilance.

We must fairly grapple with the undoubted fact that the science of grass culture yet in its infancy. Until within a comparatively recent period (and such things are ery common at the present day, especially in some of the Western and Southern tates), meadows and pastures were formed by the simple process of leaving the land, fter the cereal crops had been taken from them, for nature to take care of. Such rasses as came by chance grew without the slightest intervention of man. If good asses took possession of the ground it was well; if poorer varieties established them- elves there was no help for it. The farmer did not dream that he had any more hoice or control in the matter than he had in the formation of the clouds, or the irection of the wind. When, therefore, we see that most of what are now considered ur best meadows and pastures are those that have been found by nature without the id of art, it is not unreasonable to suppose that when science and practical skill are ystematically applied to their culture, we shall achieve better results than any that e have hitherto attained.

From what has been said above it will be inferred that we make no high preten- ons to very extensive knowledge of this great subject. We cannot teach, for the nowledge we seek is yet to be acquired. Nature hitherto has not been faithfully terrogated. If we succeed in impressing those who represent the agricultural inter- sts, the great value of the facts which are wanting in this department of husbandry, en the desire had in view has been realized, and our object accomplished.

IMPROVEMENT OF OUR GRASS LAND.

In this behalf it will be admitted that a gigantic work is to be performed by the rmers of America, which requires for its accomplishment intelligent laborers and a ng period of time. Let us try to acquire a clearer understanding of these require- ents. They are: First, that the special use of each of the different species of grass hould be accurately ascertained. Second, that the absulute and comparative values y chemical analysis and by practical trial at the manger, to be tested by the scales, e determined. Third, that the adaptation of the different species to different soils, imate, and circumstances, should be tested by thorough and repeated trials. Fourth, at the period of its growth, when it contains the greatest amount of those properties n which value chiefly depends, shall be thoroughly investigated until it is fully de- rmined. Fifth, we must learn the kind of culture and the manures best adapted to imulate its growth and to increase its valuable properties. Sixth, we must deter- ine the time of flowering of each species, and the period when its seeds are ripe. eventh, we want to know what kinds of insects prey upon each species, and the best ethod of preventing their ravages. Eighth, the best means of curing and preserving e hay.

These problems are obviously difficult. Their investigation involves some of the ost subtle questions in vegetable physiology and chemistry, and all of them require, r their successful solution, clear heads and willing hands. We must have no little reliminary training before we can enter successfully upon this inviting field of labor. irst of all, we must learn to distinguish the family of the grasses from all the other amilies of the vegetable kingdom with absolute certainty, and then to distinguish ach of the individuals of the family from the others, giving to each its own proper nd peculiar name. The graminæ forms an exceedingly large natural family, and for is reason it is difficult for a beginner to distinguish readily individual differences. n acquaintance with the terminology of botany is essential to success in becoming amiliar with the structural differences of different plants. Patience and persever- nce will enable the enquirer to overcome every obstacle; every difficulty will thus ecome easy. The words which at first appear to be crabbed and tormenting we shall nd to be symbols or only very precise and definite ideas. When the symbol becomes miliar to the mind it loses the repulsiveness of its aspect. We find, too, on a closer xamination, that there are not as many hard words to be mastered as we first sup- osed there were. The same words may be used a dozen times on the same page, and r the want of familiarity with it one may think he is encountering a new word; but little attention will satisfy him that he is quite mistaken in his estimate, and that hen he has mastered about one hundred words they will take him safely over all the hoals and quicksands with which his journey through the grasses is beset.

Grasses are not only distinguished from each other by differences in their external rm but also by differences in their quality and the amount of nutriment that they fford. Mr. Sinclair, in view of his observations and experiments, is of the opinion at those grasses which are mostly allied in their physical appearance, are also most early related in the quantity of the nutriment that they afford. Mr. Sinclair ex- resses his conclusion in the following words:

“First—Grasses which have culms with swollen joints, leaves thick and succulent, nd flowers in downy husk, contain a greater proportion of sugar and mucilage. Second—When this structure is of a light glaucous color, the sugar is generally in exces Prof. Gray's definition of glaucous is 'covered with a whitish bloom which rubs off, the surface of a cabbage leaf, or a plum, or so whitened as to appear to have a bloom Third—Grasses which have culms swelled joints, flowers pointed, collected into spike, or spike-like, panicle leaves thin, flat, long, and of a light green color, conta a great proportion of extractive matter. Fourth—Grasses which have culms furnish with numerous joints, leaves smooth and succulent flowers in a spike, or a closed pa icle, florets large and blunt, contain most gluten and mucilage. Fifth—When t structure is of a glaucous color and the florets woolly, sugar is in the next proporti to mucilage. Sixth—Grasses which have their flower in a panicle, florets pointed awned, joints of the culms smooth, sheaths of the leaves being broad, smooth and su culent, contain most mucilage. Seventh—Grasses with flower in a panicle, flore thinly scattered, pointed or furnished with long awns, culms lofty with few joint leaves flat and rough, contain a great proportion of saline matter and bitter extrac ive. Eight—Grasses with strong, creeping roots, culms few, leaves flat and roughis and flowers in a spike, contain a greater proportion of bitter extract with mucilage

This classification of the qualities of grasses with reference to the external forn was published by Mr. Sinclair in the year 1824, and, so far as we know, is the only a tempt upon record. Its importance, if it is correct and reliable, cannot be over-est mated. But it is a matter of too much importance to be received upon the eviden of any one man, however eminent. It is a stronger confirmation of the stateme that we have previously made in these papers of the apathy of farmers and grass cu turists in the management of their business that in the fifty-six years which hav elapsed since their publication no one has ever attempted to verify these position If the Agricultural Bureau at Washington, or one of the state agricultural societie would undertake this work and carry it successfully through, it would confer a pric less boon upon the farmers of our country.

GRASSES ADAPTED TO MOIST SOILS.

The adaption of grasses to soils is—outside of those forage plants almost univer ally cultivated in the Northwest—very imperfectly understood. To arrange them this order, note their distinct structure and value, so far as our knowledge extend will hardly be " love's labor lost." Let us commence with those adapted to the ric moist meadow and pasture lands of the Northwest. Foxtail, (*Alopecurus.*) Th genus has three species growing in the Northwest, but one of them only is of sufficie agricultural use or value for cultiuation, to wit: Meadow foxtail, (*A. pratensis.*) this species the spikelets are one-flowered, on very short branches, the culms uprig and smooth, from two to three feet high; the leaves are smooth and flat, though t upper leaves are sometimes rough, and the higher leaf is not more than half the lengt of its inflated sheath; light, ovate and obtuse glumes and palea both horny, the latt about equal in length. Below the middle the awn is tusseted: the spike-like panic is from one to three inches long, of a yellowish-green color, turning to light grayis brown with age; root perennial. Meadow foxtail is not a very common grass in th Northwest. It is more common in the state of Maine than in any other of the Ne England states, but it would greatly improve our pasture grasses. Mr. Gordales, Maine, says that " in some places in that state it grows four feet in length, and is est mated there as a meadow grass." The greatest weight of hay on an acre that I hav seen recorded is three tons and 125 pounds; but it usually yields about one and on half tons per acre, and an average growth of culms about two feet in height. It flow ers in the month of May, nearly four weeks in advance of timothy, and is one of th earliest grasses to start in the spring. Pastures well covered with this grass wi afford a full bite at least one week earlier than those which do not have it. It doe not flourish well in a dry soil, but on low, moist lands no grass bears the hot weathe better; and it is not injured by frequent mowing, on which account, as well as for i early verdure, it is very valuable for lawns.

Mr. Chas. L. Flint says, in his work on grasses, that it flourishes in the wester part of Worcester county, Massachusetts, but it is, nevertheless, disliked there as meadow grass, as it is very light in proportion to its bulk. It loses about sevent per cent. of its weight in drying. It thrives best on rich land, which is not too we Low meadows and boggy grounds which have been drained are best suited for it. appears, from the Woburn experiments that the produce is nearly three-fourth greater on a clayey loam than on a sandy soil, and that the quantity of nutritive ma ter is also greater in the proportion of three to two. Mr. Sinclair states that the proportional value in which this grass of the aftermath exceeds the flowering crop, is a four to three, and Mr. Parnell infers that the loss sustained by the cutting of this gras at the time of flowering, is considerable, which is not the case with most grasses This fact, and the inference founded upon it, needs verification before the truth ca be admitted. It does not grow a very good crop until the fourth year after the seed are sown, hence it is not well suited to alternate husbandry, but excellent for permanent pasture. It is the principal grass in most of the rich natural pastures of Grea ritain. Its limit of altitude is about 1,500 feet above the level of the sea. It is found ative in Lapland, Norway, Sweden, Denmark, Russia, Holland, Germany, France, ngland and Italy, but is not a native of this country, having been introduced here rom Europe. According to the analysis of Mr. Way, it contains much water in its omposition. One hundred pounds of this grass gives only nineteen and three-quarter ounds of hay, while timothy gives forty-two and three-quarter pounds for the same eight of green grass ; and the dry hay of meadow foxtail contains less than one-half f the nutriment that was contained in the dry hay of timothy. If timothy hay is orth ten dollars a ton, and the chemical results afford anything like a reliable guide o their relative values, the hay of foxtail grass would be worth four dollars and four-een cents. Mr. Way's analysis gives the following figures for the meadow foxtail rass, to wit: Water, 80.2 per cent.; albuminous or flesh-forming principles, 2.44 per ent.; fatty matter, 0.52 per cent.; heat producing principles, sugar, gum, starch, 8 50 er cent.; woody fiber, 6.70 per cent.; mineral matter, 1.55 per cent. The seed of this rass is high in price and very difficult to procure, They weigh only five pounds to the ushel, and an ounce contains 76,000 seeds. When it is desired to secure the seeds of his grass, the first growth of the culms should be allowed to stand for the purpose, as hey bear much better seeds than the latter growth.

This grass is often very highly recommended for meadows in our agricultural apers by correspondents. When inquired into it will be found, generally, that these ecommendations come from those who either live in sections of the country which re very well adapted for its production, or from those who are not acquainted with uperior varieties. Its recommendations are that it is found in abundance in some of ur very best meadows here, and in England it is very permanent—one of the first to tart in the spring, and the first to mature. At killing, viz : flooding with water, and lternately freezing and thawing, for several times. Late in the spring the whole ontents of the pan were removed and set out in the open ground. When the plants f wheat threw out their heads, there appeared chess heads also. This mass of wheat nd chess plants was brought in and placed before the committee. Stalks of chess vere shown, the roots of which were found to proceed directly from the planted heads f wheat, which yet remained entire, and in some instances they were found to issue rom the half-decayed grains of wheat themselves. This was looked upon as conclu-ive. The roots were taken by the committee, and first soaked in water, after which hey were gently washed by moving them backward and forward through it. They vere then carefully examined by a microscope. The roots of the chess were now erceived to issue, not from near the end of the grain of wheat as is usual in sprout-ng, but from the side, and, in fact, from almost any part. Further examination howed that they merely passed through crevices in the decayed wheat grains, and hat they were separated from the grains without tearing, being merely in contact, vithout adhesion or connection. Some of the more minute chess fibers were observed y an achromatic microscope to extend over the inner surface of the bran, where they ad gone in search of nourishment (which is known to abound just within the bran) n the same way that grape roots have been observed to spread over the surface of a ich decaying bone. But they easily separated, and had no connection with the bone. t was satisfactorily proved that the chess plant could not have come from these rains, by the fact that the same single stalk of chess was thus connected with five or ix different grains, which could no more have originated it than five or six cows could ave one calf. The examination, therefore, did not prove anything in favor of trans-nutation, and as there were many possible ways in which the chess might have been cattered on the soil, the whole experiment was admitted by all parties to be incon-lusive.

If we are rightly informed, there has been for years a standing offer of a consid-rable sum of money for indisputable evidence that wheat ever changes to chess. It as been claimed once or twice, but the proof, on investigation, has always proved amentably inconclusive. The only reason why the idea of a supposed transformation as become so firmly rooted, is that seasons favorable to chess are unfavorable to vheat. The whole question shows how unreliable and deceptive mere superficial bservation is, and how often a belief becomes fixed in the popular mind with no other oundation than the supposed evidence of the senses.

SURFACE CULTURE OF GRASS LANDS.

What is surface culture ? An explanation of this system of culture, and particu-arly its application to grass lands, is often asked, and I presume the same inquiry has requently been made by readers of the *Prairie Farmer*. I will endeavor to explain it, iving also something of my experience in the treatment of grass and grass lands under ts application.

Surface culture is analagous to the term "terra-culture," a system that was trongly advocated some years ago by numbers of practical farmers and agriculturists. The theories then advanced, while the writer attended a course of lectures on the ubject, are still fresh in his memory. It was held that the system was practicable in its adaptation to all crops, but it is only necessary, in this connection, to consider it application to grass and grass lands.

This system means, when applied to the culture of grass land, the protection o the different species of valuable grasses which are indigenous to the soil. By cultivating the surface of the soil and planting a mixture of the different species of th grasses results can be secured which cannot be obtained by the plow or in the ordinar method of cultivating grass land. It means, also, the formation of a strong sward b long-continued use of the land in the production of grass crops growing from fiftee to twenty-five varieties and 1,000 plants to one square foot of surface. Again, i means the propagation in the soil of those varieties of grasses that will afford t grazing stock sweet, succulent food in abundance through the entire season, a combination of different species that flower about the same period, that may be cut an converted into hay for winter food for all classes of stock that feed upon grass eithe green or in a cured condition. The hay from such a combination is much superior and relished better by stock than that which is obtained from but one or two kinds It means the production and preservation of valuable species of grasses which ar adapted to the various conditions of the soil, (when properly drained), producin summer food at the rate of three-fourths of an acre of land to one head of stock. I means the extermination of all worthless, noxious weeds found growing among th grasses in our meadows and pastures, being replaced by some of the very valuabl varieties of useful plants adapted to the various soils. It means the production o two and a half to three tons of hay from each acre of our meadow lands. But this implies a radical change in the management and cultivation of our very valuabl grass lands in various sections of the United States, especially throughout the Northwest.

This system is very simple, when applied so the culture of grass lands. It consists in thoroughly cultivating the surface of the soil to the depth (when it has a smooth surface) of about three-fourths of an inch to one inch for the seed-bed. Sow a combination or mixture of grass seeds composed of those varieties which are valuable either for a pasture, or for meadow use, then lightly harrow and roll with a heavy roller. A combination of seed for meadow should be selected with much care so as to combine those varieties which flower about the same time; this will produce the very finest quality of hay for winter feed. The selection must be made in view also of the various soils (which are many in the Northwest), constituting our grass lands. For pasture use, the selection of the varieties which do not flower at the same time, and throw out undershoots when the herbage is cropped off by the grazing stock, is very desirable, so as to obtain those which will produce sweet, succulent herbage throughout the entire grazing season.

The amount of combined grass seeds to be sown per acre is a very important consideration in the improvement of grass and grass land. We sow, when mixed, from thirty to forty pounds per acre, which will soon cause the exit of all noxious weeds from the sward, even the rag-weed. I have entirely destroyed the latter by this method of culture and seeding.

Seeding time is also an important consideration in the work to be accomplished. We sow the seeds of grasses at various seasons of the year. Commencing early in the spring, we sow until about the 10th of June when we are working the sod. Resume cultivation as soon as the grass is mown after the wheat harvest; but we do not sow any seed until about the last week in August; continue to sow till the 10th of October, and also continue the work of cultivating the soil until the seed will not germinate or the ground is closed by the frost of winter.

This has been our method while engaged in the supervision of field work, and success followed our efforts, as very many fields of grass land will demonstrate in this section of the State. The area of the plow land should not be passed without a word of caution, especially if the soil is composed of alluvial or vegetable mold, as it is more desirable to use it for the production of a hay crop until the sod becomes firm by the interlacing of the ramifying roots; then it could be stocked with perfect security. The treading of stock is injurious to the growth of the young grass plants, as is also the poaching throughout the sward.

Another matter of no small significance in this system is that of becoming familiar with the habits and physical construction of the various species of grasses that grow in different locations, so as to be able to distinguish them with ease and certainty; and also to separate the individual grasses that belong in one natural genius, or family; then we are qualified to decide whether they are of any agricultural value, or are of sufficient value to warrant their cultivation; for if they usurp the place of more valuable kinds, their extermination is desirable. Close observation will soon determine this, as a knowledge of the characters and appearance of different kinds will detect or discover them when growing on or around the farm. It is well, also, to note the avidity with which the stock on the farm feed upon different grasses; but this will be noticed more particularly hereafter.

A word, now, in relation to the management of old meadow land. When the eld of grass begins to fall below the standard—which should not be less than three ns of hay per acre—then apply the system of surface culture, in the following maner: Thoroughly cultivate the surface of the soil; that is, top-dress with a good mpost of fine manure, sow a combination of grass seeds, such as are adapted to the il. If it be an alluvial soil, well drained, the selection that I have found to give tire satisfaction will grow and meet the requirements of the farmer in quality and iantity of product: Meadow fescue, sweet-scented vernel grass, orchard grass, timhy, meadow foxtail, fowl meadow grass and red top. I do not use any Kentucky ue grass seed in this combination, as farmers will get all the blue grass they wish, their farms without sowing the seed, for it is identical with the common June grass the Northern States. This has been shown conclusively, and the evidences are en in specimens of our herbarium. White, red, mammoth and Alsike clover will well on this class of soils. In the clay soils, all of the above-mentioned grasses ill do well if properly dressed, and on sandy loam soils with thoroughly, or naturally ained subsoils. The alfalfa or lucern (*medicago sativa*) is giving satisfaction when own on this class of soil. We believe that there are grasses adapted by nature to l classes of soils, and worthy of investigation to establish their merit for agricultural ses.

RENOVATION OF GRASS LAND BY SURFACE CULTURE.

A golden adage is this: "Nature is not to be conquered except by obeying her ws." Says Sir John Herschel: "The power of man over nature is limited by one ndition; it must be exercised in conformity with the laws of nature." Before we n exercise that power with certainty and effect we must understand those laws. By e aid of science (which is classified knowledge), inquiry and observation have opened ysterious avenues, and thus man has been able to observe effects and particularly nderstand those laws and obey them. Science has taught the farmer some of the dden mysteries of the effects that different soils have in the production of different ecies of the vegetable kingdom. It has taught him that one class of soils is not ofitable in the cultivation of all kinds of crops. The habits and requirements of fferent plants are as diverse as the plants themselves. It is not necessary to enlarge pon this proposition, as it is universally understood.

The relative value of grasses is becoming a subject of increasing importance every ear with the farmers of this country, and the renovation of grass lands by surface lture constitutes one branch of this great department of rural pursuits which canot fail to interest the farmer who reflects upon the outcome of his business from his eld crops each year, the uncertainty of paying returns from his plow land, and the ertainty of a crop of grass at comparatively small expense. Many farmers in the estern States of recent years have already realized the fact that their grass lands are e sure sources of their wealth. The best method of increasing the productiveness those lands is what such farmers desire to know, and this applies not only to lands at are worn by constant cultivation, but to such as are thinly covered with grass, nd to such also as are nearly worthless in their natural condition, so far as any rerns from them are taken into account, yet are almost exhaustless in elements for the pport of valuable vegetable life.

Let us consider briefly the relations that theory, practice and nature bear to each ther, and to the ultimate result in our investigations. Theory is often referred to in erision, but all experiment is based upon theory, good or bad. Theory plans the ork like an architect; practice performs the work like a workman; nature will pay proportion as her laws have been obeyed by the plans of the architect.

Theory has suggested that all wet lands should be thoroughly drained, else they ill not produce paying crops, and this has been demonstrated by practice. I shall ot discuss the various systems of drainage, for they are very closely allied to the thery and success of surface culture. To know when, where and how to drain lands, hile intimately connected with the subject in hand is a branch of it too extensive to e considered at this time, and is not necessary to our purpose, but it is one which emands close examination and careful study by farmers generally. and of late is ttracting much more attention than it has done heretofore in the central Western tates The theory of surface culture of grass land is not a new one. In England nd Holland there are grass lands that have not been plowed during 200 years, and neir rental value has increased with their age. Even in New England there are grass nds whose soil has not been disturbed by the plow for a long period, yet they are the ost valuable lands in the Eastern States. I assume, as tenable, the position that he grass lands are the most valuable lands in the Northwest, and by proper treatment hey will yield a large increase to the wealth of their owners in proportion to time, bor and money invested. This has been demonstrated in my own experience. Vhen this series of papers was commenced in the *Prairie Farmer* there was a promise hat a review would be given of the writer's personal experience in cultivating the ultivated grasses. This will now be done.

Several experimental plats were sown and cultivated, the following being th results: Plat No. 1 contained eighty acres; soil a peaty formation of a depth of abou six feet, resting on a substratum of gravel and water; drained by open ditche Twenty-five acres had been plowed and cropped with buckwheat; cultivation by su face culture; cost of labor $4.50 for the unplowed land, and $3.50 for the plowed lan per acre. The vegetation growing on the land before the work of cultivation com menced was wire grass, slough grass, sedge and willows. Grass seed sown per acr timothy, ten pounds; red top, seven pounds; time of seeding, early in Septembe 1875 The present condition of this land is as follows: Surface of the soil, more fir and dry; good stand of red-top on the unplowed land and a weak stand of red-top o the plowed land. In seeking for an explanation for the failure of the grasses on th plowed land, an analysis of the soil of a peat formation in its natural condition is o service:

Water of absorbtion	3.
Humus (decomposed veg. matter)	4
Undecomposed veg. matter	75.
Aluminia	7.0
Silicious sand	10.

These are the basis of vegetable food, and as it becomes exhausted must be sup plied by top-dressing. The surface of the soil, when analyzed, is found to consist o silica and oxygen in nearly equal proportions. It forms the skeleton of all the soil rendering it permeable to moisture, heat and light, the three elements especially essen tial to vegetable life. Next to sand, aluminia is most generally present in soils—th oxide of the metal aluminum, two parts of aluminum and three parts of oxygen, com bining in the same way that sand consists of silica and oxygen, or as rust consists o iron and oxygen. These two essential elements required in soils for the growth o valuable vegetation are found located in the surface strata of this class of soils. B the process of plowing, these elements are covered with from four to six inches o undecomposed vegetable matter which is not natural food adapted to the growth o the cultivated grasses, as was demonstrated by several experiments I made on thi kind of soil. The failure of the grass on the twenty-five acres of plowed land coin cides with the experience of many farmers who have had a like experience with thi class of soil—that is, using the plow in the process of cultivating the land for the pur pose of seeding it to the same grasses. We know by experience that the more porou we make the soil with the plow it increases its susceptibility for receiving heat whic causes a rapid increase in the evaporation of moisture which, it hardly need be said is one of the essential elements in the support of vegetable life, especially so to growing grasses in this class of soils.

Plat No. 2 consisted of fifty five acres used as a pasture lot for about thirty years In some portions of the lot the surface was very rough, or what is known as bogg land, caused by poaching of the cattle during periods of wet weather when the eart was soft and spongy. The soil consisted of black loam mixed with sand about eightee inches deep, resting upon a clay sub-soil, well drained with tile and open ditches Cultivation was by surface culture, at a cost of $5 per acre; quantity of seed an varieties sown per acre was, timothy, ten pounds; red top, seven pounds; Kentuck blue grass, five pounds; sown in September. The following spring three pounds o red clover were sown. This lot had been used as a meadow, and the first two year after it had been renovated it was likewise used as a meadow. The week previous t its being mowed I made an examination of the lot and selected specimens of the following varieties of grasses growing thereon: Timothy (*Phleum pratense*); red top. (*Agrostis vulgaris*); white top, (*A. alba*); Kentucky blue grass, (*Poa pratensis*); fowl meadow grass, (*P. serotina*); rough meadow grass, (*P. trivialis*); spear grass, (*P. annua*); drop seed grass, (*Glyceria nervata*); tall Buffalo grass, (*Bouteloua hirsuta*); rye grass, (*Lolium perenne*); barley grass, (*Hordeum jubatum*); blue grass, (*Poa compressa*); and red and white clovers. The yield per acre the first season after cultivation and reseeding was ——— tons of the finest quality. The next season the product was two-and-a-half tons per acre. Since cutting that crop the lot has been used for stock-grazing, supplying good nutritious food through the entire grazing season at the rate of three-fourths of an acre per head of stock.

We have previously given the value and analysis of the above named grasses as far as we have them at our command. In this selection of specimens we find all of these different varieties growing in one field of fifty-five acres located near Whitewater, Wis.

The attention of those who advocate through the agricultural press and otherwise, the doctrine of plowing up the old pasture lots and reseeding them with timothy and clover, is respectfully invited to the difference in the above combination of seeds and the common practice of sowing four quarts each of clover and timothy per acre which produce about 160 plants per square foot of surface and very weak and feeble at that. In the above plat we have nature's combination adapted to the soil and climate, with the addition of three varieties, that is, Kentucky blue grass, (which is lentical with our common June grass) and which was well set in the pasture lot efore it was well cultivated. I had almost forgotten to mention the quality of the ay produced on this lot; it was sought for by all the stock on the farm and was eaten vith great avidity in preference to any other hay that was fed.

Plat No. 3 consisted of about five acres covered with a very heavy growth of rag veed, motherwort, catnip, and other noxious weeds. The soil was composed of ravelly loam resting on a naturally drained sub-soil, which would locate the land on higher elevation than that occupied by the foregoing plats. Cultivation was done y surface culture. The amounts and varieties of seed sown per acre were as follows: Timothy, nine pounds; red top, seven pounds; orchard grass, five pounds; red lover, four pounds; white clover, two pounds; alsike, three pounds. Time of seedng, April 1, 1878. Result a good strong stand of grass in the place of noxious weeds. The rag weed was completely smothered out. This plat was selected for experiment o establish the following points: 1. That thorough surface culture and heavy seedng would subdue the tenacious rag weed. 2. The endurance and vitality of orchard rass in that class of soil. 3. The effect on the growth of red clover sown upon land ot cultivated with the plow. 4. The longevity of red top on a dry soil, also the comparative value of alsike clover grown on moist soil. From this plat the following leductions resulted: Heavy seeding will effectually smother all noxious weeds from he soil, and a light distribution of seeds will be followed by a large growth of noxous plants growing in the intervening space of naked surface of soil. The orchard rass proves to be very tenacious in this kind of soil, and very prolific in its growth of roducing a very large amount of good sweet herbage. The plat was used for grazing oung stock. The red clover has done well in this plat of ground, and I observed this hange in the growth of the roots of red clovor when grown on land not cultivated vith the plow, that it has coarse, fibrous roots instead of a tap root, or like the parsnipormed root. In every instance where I have examined clover sown upon uncultiated land, I find the fibrous-formed roots which very strongly resist the alternate reezing and thawing which is so injurious to the roots of clover sown on cultivated and. We have examined a stand of red clover growing on sward land fifteen years ince the first seed was sown, being propagated by cutting the first crop and allowing he rowen to remain undisturbed and the seed to ripen and fall upon the surface of he soil—according to Nature's laws. In relation to red top we find it will hold its osition with the other varieties of the grasses, which coincides with its historical rowth in England as described in a former number of these articles in the *Prairie Farmer*. In comparing the growth of the Alsike clover grown upon moist soil it has lone far better than on a dry soil; hence we conclude that a moist soil may be recomnended for it.

The results of experiments made under the observation of the writer, in cultivatng the grasses, were detailed in the last number, as to plats 1, 2 and 3.

Plat No. 4 contained thirty-six acres; soil alluvial, resting on a clay subsoil; fornerly covered with a very heavy growth of hard and soft wood timber. The surface of the land was in very fine condition, the stumps and surface roots having been emoved. This plat was cultivated and seeded with a combination of grass seed for ermanent pasture use, the following being the formula: Timothy, six pounds; talian rye grass, four pounds; orchard grass, seven pounds; fowl meadow grass, hree pounds; red top, five pounds; red clover, three pounds; white top, three pounds; lsike, three pounds; which made by measurement one bushel and a peck of seed per cre. The seed was sown the last week in August, 1877. The first crop was cut for ay. Since then it has been stocked with a dairy herd of cows. In addition to the varieties sown, the following varieties are found intermixed with the grasses growing pon this plat, to wit: Kentucky blue grass, and rough stalked meadow grass. This ot produces feed at the rate of three-fourths of an acre per cow. The quality of the nilk afforded by the herd on this pasture is excellent, and the butter made from it is narketed in Boston, Mass. In this plat we find the orchard grass a vigorous grower while the Italian rye grass is not as strong as the former, or as meadow fescue. From his lot I selected a number of specimens.

The valuable varieties of grasses for permanent pasture are those that will proluce undershoots when cropped off by grazing stock. Among these are the following varieties: Barley grass (*Hordeum jubatim*), rye grass (*Lolium perenne*), meadow fescue *festuca pratensis*), are wonderful to produce a large amount of herbage early in the spring. In May last, the 10th, I saw snow in several pastures in this vicinity, and durng the last days of the month I measured leaves of the meadow fescue which were wenty-six inches long. Meadow foxtail, Kentucky blue grass or June grass, also start early. Orchard grass is a very rapid grower, as will be noticed in the description previously given of it. In our herbarium is a specimen which grew thirty-six nches in length in thirty days, on gravelly loam soil. Another important considertion is to secure a combination of those varieties of grasses which mature at different periods so as to secure a supply of good nutritious food during the entire season of grazing, which is very desirable to the dairyman and stock raiser. This can be accom-

plished in many sections of the Northwest by selecting what is generally termed th
low lands, which are composed of a black soil, from two to three feet deep, resting o
a subsoil of clay. The land should be drained with care so as to relieve the soil of th
excess of moisture, then cultivate the surface sufficiently to secure a good seed be
and to give a smooth surface; sow a combination of grass seed similar to that use
on plat No. 4; mow it the first season, which will allow the sward to become firme
and the grass to take deep root, which will enable it to withstand the strain upon
while the herbage is being cropped off by the grazing stock. This class of soil i
usually retentive of moisture when dressed with a heavy covering of vegetation, suc
as the combination recommended will produce, and enable the plants to withstand
severe drouth without seriously affecting its vitality. This has been demonstrated i
many instances in the State of Wisconsin.

Plat No. 5 consisted of thirty-three acres; soil composed of black mold situate
near a higher elevation of cultivated grain land; surrounded by an open ditch; th
surface of this plat was covered with a very light growth of native or slough grass
The cultivation was done by surface culture and the following varieties and quantit
of grass seeds sown about the 10th of September, 1877: Timothy, ten pounds; red to
seven pounds; fowl meadow grass, five pounds. Results as follows: On the 10th o
the following July I selected fully developed red top plants, and fowl meadow gras
as well as timothy. I am quite positive that there was no red top growing on thi
tract of land at the time it was cultivated, for I superintended the work in person an
made a close examination of the grass that was growing there when the cultivatio
of the lot was commenced. The first yield of hay was about two tons per acre. Thi
plat is now in use for a meadow, being covered with a very strong sward and yieldin
about three tons per acre.

Plat No. 6 contains one hundred acres joined by plat No. 5. The surface wa
very smooth and good; soil similar to plat No. 5, from two to two-and-a-half fee
deep, resting on a clay subsoil, drained by open ditches, and covered by a heavie
growth of vegetation than plat No. 5, consisting largely of sedge grass. The land wa
cultivated and sown about the 2d day of September, 1878, the design being a perma-
nent meadow. The following combination of seed were sown, to wit: Timothy
twelve pounds; red top, seven pounds; fowl meadow grass, five pounds. Thre
pounds of red clover was sown per acre in the spring.

When the grass seed was sown in the fall it was mixed with one bushel of har
wood ashes per acre, after the ashes had been run through a fanning mill, which mad
them a good, clean fertilizer. This plat is yielding a good supply of hay, and th
stock is not allowed to feed off the aftermath, which is very injurious to the growt
and vitality of the cultivated grasses, especially in this class of soils. The ashe
which were sown with the grass seed proved to be a good fertilizer, as the effect coul
be seen for a long time on the growth of the young seedling.

Plat No. 7 consisted of forty acres—an old meadow lot. Soil sandy loam, abou
two feet deep, resting upon a porous subsoil. This lot of land had been heavily to
dressed with compost manure; surface smooth, as it had been cultivated and croppe
to several kinds of the cereals and also with hay for about eight years, though givin
a light yield. Time of seeding about the 15th of April, 1876; cultivation by surfac
culture. Quantity and varieties of grass seeds sown per acre, to wit: Timothy, twelv
pounds; orchard grass, seven pounds; red top, five pounds; red clover, six pounds
The cost of labor, $5 per acre; result, a splendid stand of grass and a good yield o
hay the first season, as the young timothy plants were but one foot in height, and th
young plants of orchard grass were about the same height, which made a desirabl
quality of hay for winter feed for the dairy stock. Another important fact is demonstrated in seeding this plat, *i. e.*, heavy seeding on this class of soil will very muc
assist in the retention of the moisture contained in the soil, which is very essential i
promoting the luxuriant growth of these varieties of cultivated grasses.

Plat No. 8 consisted of seventy-five acres of cultivated land cropped with whea
and oats; cultivated the last week in August; soil clay, mixed with sand, restin
upon a porous subsoil. The following combination of seed was sown for a meadow
to wit: Timothy, twenty pounds; orchard grass, ten pounds; sown the last week i
August, 1876; and the following March, when the freezing and thawing process wa
going on, the following amount of clover seed was sown, to wit: Red, eight pounds
and alsike, five pounds per acre. This combination of seeds makes a very fine qualit
of winter feed for all classes of neat cattle if cut early, cured without being wilte
and bleached by heavy rains during extremes of heated weather. This combinatio
is very desirable for a crop of hay for the reason that the timothy and orchard gras
will absorb a large portion of the excessive moisture in the clovers. Also the alsike
having a smaller stem and of a more soft and pliable nature, forms a very desirabl
adjunct with the other grasses, while they all flower about the same season of th
year.

Plat No. 9 contained forty acres of stubble land, cultivated by surface culture th
first week in August, 1877. The following combination of grass seed was sown, t

t: Timothy, fourteen pounds; orchard grass; seven pounds; meadow fescue, seven unds; rye grass, six pounds; and in the month of March following, three pounds red clover per acre were sown. Soil clay mixed with sand, resting on a subsoil of ay, is used for a meadow. We have in our herbarium thirty-six select spikes of timhy that measure not less than nine inches in length. These spikes, or heads, were lected from this plat (No. 9) previous to cutting the crop of hay in 1878. The results en on this plat, furnish additional proof that by proper attention to the habits of difrent varieties of the grasses, we cut from a combination of seeds which are adapted all classes of soils (when properly drained), and will give entire satisfaction to the rmer. In every case the hay produced from the combinations of seed, used on these fferent plats, has not failed to give entire satisfaction when fed to stock, if it was t at the proper time and secured in the barn without injury from heavy rains. Our servation coincides with the experiments of Mr. Sinclair, in relation to the time of tting a crop of grass for winter feed, to wit: at the time of flowering.

Another suggestion is proper, right here, to wit: In cultivating a field of stubble nd, it should not be worked too deep; half or three-fourths of an inch is sufficient to cure a good seed-bed. On firm classes of soils I have even sown the combinations grass seed on a loose, black soil, with no cultivation except rolling with a very avy roller, just before a heavy rain fall in the latter part of August, or first part of ptember, and with most excellent results.

Plat No. 10 contained ten acres, the tract itself being rough—but surrounded by nooth surfaced land. These knolls, or ridges, in fact, were in the center of a splendid eadow, over which the mowing machine was used with entire facility. This, as well the ten acre tract, was designed for a permanent meadow. I used the plow in the llowing manner: Threw the furrows to lowest ground, cultivated thoroughly with rotary cultivator, following this with a leveler, taking the earth from the highest int and leaving it in the lowest. The work was done during the latter part of June d the ground seeded to buckwheat. The first of September I sowed the usual comnation of seed for meadow, scattering the seed among the standing buckwheat, folwing the seeder with the mowing machine and finishing the work with a heavy ller. The soil having been rendered loose by the growth of the buckwheat, it did t require any more cultivation, and cutting the stand of buckwheat before the seed ould germinate left young seeding free from the second growth of the buckwheat, d leaving the stand of buckwheat scattered over the surface of the land furnished excellent mulching for the growing seeding, assisting also in the retention of oisture by arresting evaporation, which is very rapid in a porous subsoil. Cost of oor on this plat was $10 per acre.

MIXTURES OF GRASS SEED FOR VARIOUS SOILS.

The formulas or mixture of grass seed for the various soils upon which I have ade experiments have been given already. It remains to give the formulas used by rmers in England, as well as in this country, which have been found adapted to rious soils:

r sandy soils:	*Lbs.*
nothy	2
d top	6
lvet grass	4
ugh stalked meadow grass	6
hite clover	12
dicago maculata	3
eeping meadow grass	3
Per acre	36

This formula contains the mixture of red top given in the history of that grass in revious paper.

r a sandy soil, with a slight mixture of clay:	*Lbs.*
nothy	2
ugh stalked meadow grass	6
eep fescue	6
e grass	4
adow oat grass	3
tch, or wild pea	2
wire grass	3
d clover	10
Per acre	36

r calcareous soils:	
adow Brome grass	5
chard grass	4
t grass	4
e grass	2
ugh M. grass	9
ntucky blue grass	2

Tall spear grass	
Lucerne	
Red clover	
Italian clover	
Per acre	4

For stiff clay soils:

Timothy	
Meadow foxtail	
Rough meadow grass	
Meadow fescue	
Sheep fescue	
Wild parsnip (*P. dannm officinale*)	
Medicago muculata (species of sea weed)	
Red clover	1
Vetch	
Per acre	3

The comparative value of very nearly all the varieties mentioned in the above formulas has been heretofore given, and where they may be grown in this country has also been stated, especially in the northwest and central western states, which are directly interested in the improvement of our grass lands.

In this series of papers less attention has been paid to the clovers than to the grasses proper, because their value is so generally known through discussions in the secular papers. On a closer inspection of the English formulas for seeding we find a light mixture of the clovers in their various combinations of grass seed for different soils. *Lathyrus pratensis*, a species of the wild pea, can be found growing in the cultivated fields of southern Wisconsin. Vetch will be found growing in the low meadows of the Northwest. Italian clover has been found in the vicinity of Lake Mills, Jefferson county, Wis.; we have a specimen growing in our herbarium. Lucerne, or alfalfa (*Medicago sativa*) grows on well-drained soils in the northern states; but of this plant I may have something further to say at another time.

CONCLUSION.

Here is a lesson for the farmer to study, although I am aware that we do not have the same climate as in Europe. But select those grasses that will grow in this climate, cultivate and sow seed, as we can grow more varieties than are grown. England boasts of twenty-two species grown on one square foot of surface. Let us not be satisfied until the entire surface of the ground is covered, leaving no room for the growth of obnoxious weeds, and yielding that which is of value in prosecuting the interests of its owners; nor rest from well-doing until we can say with pride that the unproducing grass lands of the Northwest are covered with verdure. May the work of surface culture of our grass lands be prosecuted until the coffers of its owners are groaning under their heavy golden burden—is the wish of all who are interested in its results. Sow the seed till the globe is a mass of vegetable life. Their functions are to reclaim naked, barren spots, and improve all their surface. They are the basis of all animal life and existence. Their very beauty social and benevolent language renders this a place of delight. He who communes and meditates among trees, flowers and grasses will find his Maker there to teach his listening heart.

A PRIME FORAGE CROP IN A DAIRY DISTRICT.

Alfalfa belongs to the great order of plants known as leguminosæ, which includes the peas, beans and vetches, lupines, as well as other sub-orders and lucerns. Its botanical name is *Medicago sativa*, and its best known common name French lucerne. Having first gained a foothold and a good reputation in our country, in California, by reason first, of being capable of withstanding their long-continued drouths, and secondly, by its own high value as a forage plant, on account of the unusual amount of saccharine matter it contains. It has been known locally as "California clover," as it has also been known in California as "Chili clover," from having been thence introduced into California. In its South American travels, French lucerne acquired the Spanish name of alfalfa, which, being a single word, is preferable to its former compound name. Another result of its southern travels has been to cause those not familiar with its history to consider it a southern plant, and to lead them to question its ability to withstand the cold winters of a northern climate. But its long continued cultivation and permanent and profitable growth in portions of France and Germany, where the cold is as great as in the middle of the United States, settles the question of its hardiness. Besides, the great depth to which its tap-roots penetrate, not only prevents its being "heaved" or "spouted" out by frost, and so indicates its capacity to stand hard winters, and aslo indicates its equal ability to endure the severest drouths without being "killed out" or failing to produce its frequent and succulent crops. Its exceeding value as a *soiling* plant for all domestic animals—horses,

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ules, cattle, and even hogs—has been for hundreds of years so fully established in ırope, and again shown in California, the land of its adoption, that it would seem edless to produce more evidence on that point, but for the benefit of those who ve not the means at hand for looking up the evidence, I will cite first the secretary the State Board of Agriculture of Connecticut, who says in his report for 1868-9: For purposes of soiling, lucerne is an excellent auxiliary crop, as it can be cut five six times in a season and needs but little cultivation after the first year. It is a rennial, long-rooted plant, requiring a rich soil, with an annual top-dressing of ne, ashes and barn-yard manure, and should be sown in drills fifteen to eighteen ches apart, and kept free from weeds." Mr. Lewis, of Herkimer county, N. Y., in s address on dairying, before the Massachusetts State Board at Barre, in 1872, says: As a soiling plant I regard lucerne as the best—cattle eat it with great relish. It ill grow more than one hundred inches in a year, on a good soil that is adapted to s requirements. It wants a deep, loose, mellow soil, and if the soil is open so that e roots can run down about eight feet, to reach water, it will be found the proper velling place for lucerne."

Of lucerne in Europe, Loudon says: "The principal and most advantageous actice with it is that of soiling horses, neat-cattle and hogs." Mr. Wycoff says: For milch cows it is superior to any other hay—it excites the secretions." Mr. C. F. eed, speaking officially as president of the California State board, says of alfalfa, that cut when it is in bloom, it makes hay of good quality for stock of all kinds, but pecially for milch cows; that according to the testimony of good dairymen, cows ken from the native grasses and pastured on it will increase in product of milk, ıtter, and cheese, sixty to seventy per cent. Most careful and accurate tests made dairymen in California, show that feeding milch cows upon alfalfa increases the ıantity and improves the quality of the milk, at the same time and almost equally—result quite different from the usual one, where quantity is increased only at the pense of quality." Mr. E. W. Hilgard, in his report on the agriculture and soils of ılifornia, says: "Undoubtedly the most valuable result of the search after forage ops adapted to the California climate, is the introduction of the culture of alfalfa, plant able to withstand a drouth so protracted as to kill out even more resistant ants than red clover."

And now come down to actual experience with alfalfa here in southeast Missouri. 1878 we had what our Boone county friends euphoneously called "a year of full oisture," and that year, for "soiling purposes," I could have cut all my alfalfa ery two weeks, from the middle of April to the first of December. I *did* cut it for *ıy* in May, June, July and August, cutting it the first week in May, the second in ıne, the third in July, and the fourth in August, as nearly as I recollect, and then ısturing it heavily during October and November. The fall before a heavy crop was anding on the ground late in November, which I gave to a couple of Creoles to cut ı shares, but the night before they were ready to go to work, we had a heavy freeze, aking ice over the creek and whitening the stalks of alfalfa, and effectually scaring f the Frenchmen from haying. Cutting it for hay in this climate, the mowing ckle shaves Jack Frost at both ends of the season. The American hay-tedder is eded for air-curing the product, for we cut it in the spring, before the sun has sufficient power to dry it, and also in the autumn, after its rays have lost their power to complish that result.

In 1879 we had a year somewhat deficient in moisture—as our Boone friends would ıubtless put it; in fact, we had one of those drouths that would injure the first crop red clover, ruin the second, and on all but the moistest of localities, rendered the mothy crop "not worth cutting;" to avoid being subject to which, I had years before obtained alfalfa seed from California and sown it, and the result showed the advantage of having a forage plant whose roots go so deep as to render it independent drouth. From all over the country came the complaints that the timothy meadows ould not "pay to cut," and in many cases the stand itself was lost, and all sorts of pedients were resorted to for a supply of forage or "roughness." That year I did ıt cut alfalfa for hay each month of May, June, July and August, but I cut four ops, a little further apart, and I had plenty of hay of the very best quality for all ıe stock.

Here in Missouri I should far sooner expect to find any other forage plant injured the winter than this deep-rooted lucerne. As to its uses, California reports, 1878, ıat at first alfalfa was used almost exclusively for pasture and green-soiling purposes, but during the past three or four years, alfalfa hay has become a regular article the market. Here in Missouri I have fed it to mules, when freshly cut, as if I were een-soiling them, and they would neglect their corn or ground-feed for it as they ould also later for the dried new hay. Fed from the mow where it was mixed when ıt in with all other kinds of forage that we cut; the shoats in the yard show their preciation of the food best adapted to their use by carefully selecting out the alfalfa ıd eating the dried hay with relish, while all other stock equally show their preference for it.

This statement is made with full knowledge of the excellence all tame grasses attain in this district, which is as good a blue-grass region as the far-famed Kentucky and as favorable a dairy country as any in New York or Ohio.

As to soils: In going over the authorities, it would seem as if each one recommended that soil only as adapted to its favorable growth in which the individual writer has it or has seen it growing. But we find recommended the richest loam and the sage-brush desert-land of Nevada. All agree that a close, tenecious soil, with hard-pan near, undrained and undrainable, is fatal to it, but so it would be to most plants. Neither men, animals or plants can stand "wet feet" with impunity, unless they happen to be aquatic plants or hippopotami, and as Patrick found his cow to do proportionally better as he increased the proportion of bran and lessened that of sawdust in the mixed feed he chose to give her, so alfalfa will undoubtedly do the best in the richest soil, but while my experience with it here is on creek bottom land, stray plants of it scattered on upland clay soil, in manure hauled out, flourisned so well I am convinced it would do well on any good corn-land. In the San Bernardino Valley, California, alfalfa gives eight cuttings a year, of fine quality, and the hay is in great demand.

C. C. Buell said he believad in seeding land by limiting the plowing to two or three years.

O. S. Cohoon said there was no grass that would reseed but clover, and he doubted whether that was a judicious thing to do.

Prof. Burdick worked under the system of surface culture and did not believe in sowing grass seed with grain, but sow it on the sod; three-fourths of an acre will produce grass enough for one cow; would commence sowing grass seed as soon as the frost leaves the ground, and would sow as late as October 1st. Does not advocate sowing grass with grain.

John Gould, of Ohio, said the best meadow in his State is one that has been cut twice each year for the past fifty-four years; little or no manure had been put on it, and no money could hire the owner to have this meadow plowed. As to surface culture, he thought the shallower the better.

Buell—Is there anything peculiar about the meadow?

Gould—Do not know that it is different from any other.

Question.—How is the drainage?

Answer.—Porous subsoil.

Mr. Coe said he raised tame hay. Some people could not cut a meadow out in two or three years. He could not.

Mr. Simonds said there was more money for the farmer to cut two or three crops, plow under and then seed again.

Mr. Green did not reseed at all. Where land is too moist for corn it was better to harrow in. If a farmer does not get $10 per acre from his farm he cannot make money from his farming operations.

T. H. Baker said with most farmers corn, oats and grass were the main crop; by rotation we get larger yields. Seed to timothy, and clover with oats, harrowing once. Usually got good results by sowing timothy as soon as the oats were cut; top-dresses and gets heavy yield—two-and-a-half to three tons per acre. No trouble in reseeding clover.

On motion, adjourned to eight o'clock P. M.

Evening Session.

The Association was called to order at eight o'clock.

While waiting for the audience to get seated, Secretary McGlincy read the following from I. Boies, written from Genoa, Ill., under date of December 11: "Whole amount of milk received from April 1st to November 1st, 1882, seven months, 1,830,777 pounds, from which was made 70,456 pounds of butter, which sold net at home for $23,058.30. The past summer has taken more milk for a pound of butter than any summer since I have been in the business. I think November milk made 4½ pounds of butter to the 100 pounds of milk."

THE POETRY OF BUTTER.

BY MRS. FANNIE MCCARTNEY MALLORY, OF STERLING.

Since the late lamented Horace Greeley wrote his immortal treatise on what he knew about farming it has been taken for granted that any one may discourse upon y subject with which he is totally unacquainted, and deliver sage opinions upon pics of which he is entirely ignorant, and still be suffered to run at large.

For me to follow this dangerous precedent and tell what I know about the dairy isiness would be to leave unoccupied twenty-five of the thirty minutes offered me, nce I am quite sure that my actual, practical knowledge upon the subject could not elaborated to take up more than five. While it would be a calamity to me to have y supply of butter and cheese cut off, I am forced to admit that my ideas as to the ecise method of their manufacture are very few and vague.

But while the practical side of the important matters which have called this Con- ntion together must be left, by the greater part of the world, to those whose especial re it is, the dairy has a history, ancient and modern, and, in English, a beautiful erature as old as the language itself, which all may understand and enjoy.

Butter has an ancient name and an honorable history centuries older than the nglish language; and though its modern uses are most prosaic and it is among us as mmon a substance as we could name, this was not always its case. It may be said have its noble ancestry; to have enjoyed its palmy days of aristocracy and in one nse to have descended rather than arisen to its present position in the world.

Its earliest mention in history is by Herodotus, who speaks of its use in his ac- unt of the Scythians. Plutarch also writes of it. So you see it has employed the ns of the greatest of ancient historians and biographers.

There is no earlier mention of it than this, for the butter of Scripture was not urned, but was merely cream which had never been agitated.

These famous authors, Herodotus and Plutarch, wrote of it, not as an article of od, not as brought upon the table, in a dish however costly or elegant, a dish which ight even have had to stand below the salt, a dish the contents of which would be relessly devoured and at that only as an adjunct. They wrote of it as the extreme xury of a lady's toilet, kept upon her dressing-table beside her benzoin and myrrh, r carven box of artificial bloom and her casket of flashing gems. The Roman maids d matrons of fashion used it as a dressing for the hair.

The physician and surgeon, too. In those old days a man mighty in the minds the ignorant mass of the people, kept in a dark corner of his secret closet, among s charms and philters, his potions and poisons, his plasters and ointments, a care- lly covered receptacle containing his most soothing salve, his most healing and mforting unguent, and this precious, mysterious substance, which he applied with e professional wisdom to the wounded of the Roman legions returning from battle, d the ghastly gashes of the gladiator dragged torn but breathing from his trial in e arena, was only unsalted butter.

As you sit down at your breakfast table in the morning and your eyes fall upon e round dish next the castor, raise the cover of that dish by the cow poised upon top in an attitude which no live cow ever did or could assume, and carefully scan contents, not with the cold eye of the critic who might search for its imperfections the way of color, or odor, or possibly foreign particles admixed, nor with the dis- rted vision of the world-wise cynic who might sniff it contemptuously and denounce as oleomargarine, but as a person of education, of culture, of æsthetic taste should. iink not that it may be old, but remember that it is ancient. Let it bear to you e odor of elegance, the flavor of high art in personal adornment, the color which as so infinitely becoming to those Italian beauties who wore it so long ago.

Fancy a teasing little Tullia beseeching her warlike pap to bring her home a jar butter from his next spoils. Imagine Amelia, insanely jealous of her bosom friend lia, who calls upon her just long enough to say, in the Latin of the best society, Isn't it a charming day? Did you see that lovely fight at the Coliseum last week? e met one of those dear, sweet gladiators on the Appian way last evening, the one ho slew two lions and a bear. Smell my new butter? Bye-bye, darling." And am- tious Miss Amelia, rushing immediately to the bazaar where the choicest accesso- es of the toilet are for sale, and eagerly inquiring, "Have you any perfectly gorgeous itter?" Consider the terrible situation when not even Amelia's offer of this tempt- g gift to her daughter-in-law, Prupeda, would induce that willful matron to forego r Platonic friendship with that Clodius whose presence at her house caused her vorce from her illustrious lord, since Cæsar's wife must be above suspicion.

Remember that a disagreement between two noble ladies as to the relative merits butter and oil as a more elegant dressing, extended to their powerful husbands, ought about political discussion in the Senate. And indeed less important topics an those of taste frequently caused the sparks to fly in that most inflammable legis- tive body.

How these fashionable dames would have stared had any one suggested eating itter. It would have been an extravagance second only to Cleopatra's famous one drinking costly pearls dissolved in her wine.

If the ancients had been thoroughly up in the art of advertising, their daily papers ight have contained a column which, translated, would read thus:

BACKACHE POSITIVELY CURED BY DR. MENDUS' CONCENTRATED TRIPLE EXTRAC
OF BUTTER.
FOURTEEN REASONS WHY IT EXCELS ALL OTHER REMEDIES IN THE WORLD I
ITS URBEFACIENT, STIMULATING, SEDATIVE AND COUNTER-IRRITANT
EFFECTS.
NO SUFFERER FROM ANY DISEASE WHATEVER NEED DESPAIR WHO IS WILLIN
TO GIVE A FAIR TRIAL TO DR. MENDUS' FAMOUS BUTTER.

What a descent from such lofty pinnacles as these of ornament and healing to th vulgar uses of the table ! as an article of merchandise in the food market, inseparabl allied with cheese, which has no such magnificent history.

But, even as used among us butter has, in English literature and in the minds c English read people, a very pretty place.

The name of the dairy carries with it an aroma of romance suggesting a retre delightfully cool and sweet, kept so by its spotless stone floor and its flowing sprin of limpid water. And the presiding genius of the place, the dairy maid of poetry an song, is proverbially pretty and bewitching.

> "Her face so sweet,
> Her dress so neat,
> Her voice is melody itself."

If we had space we might quote largely from the poets, English, Scotch and Irisl who have, almost without exception, left a line or more of flattering mention of thi indispensable feature of rural life. Indeed, the most popular character before th public to-day is Patience, the dairy-maid, the charming little heroine of Gilbert Sullivan's favorite opera.

But, alas! In spite of the laudable efforts of poets, dramatists and novelists t perpetuate in song and story the poetry of the dairy, the hard, practical, matter-o fact spirit of the day is determined it shall be preserved only in tradition.

Since the advent of the modern creamery and the frequent assembling of dairy men's conventions, tender sentiment in regard to butter and cheese is perceptibly o the wane. There is not the faintest flavor of romance about butter made by men an machinery, butter the subject of discussion by grave, deliberative bodies. Butte under the rule of presidents and processes is hopelessly sunk in the depths of the prosaic, no matter in what other sense it may be high.

I am told that among the most extensive business enterprises of the day rank that of manufacturing butter and cheese, and as a source of profit to the people it i no doubt of the greatest importance.

Seriously, no one can regret the rise from a limited private industry to a grea public enterprise with all the benefits and advantages it bestows. And there is roor for a suspicion that the poetry of the old, laborious way of doing this work may hav been more in the conception of those who wrote and sung of it, than in the actua execution. Be that as it may, we might as well make the best of the inevitable an rejoice in the change which opens new avenues of industry and supplies the peopl with so desirable a luxury as that of which we have been speaking.

We must content ourselves with the dairy poetry of the past, for this is a practica work-a-day world, and in this particularly prosaic age of it we can perhaps get alon better without sentiment than without butter.

OHIO DAIRYING; ITS METHODS AND TENDENCIES.

BY JOHN GOULD, AGRICULTURAL EDITOR CLEVELAND HERALD.

Dairying in Ohio is coexistant with its history, and upon the Western Reserve that especially distinguished province of Ohio, dairying has been its chief industry and substantially it may be said that the white farm-houses, its schools, colleges anc churches, are the visible evidences of a uniformly prosperous occupation. And whil the production of grain has increased to twelve million bushels for the three great staples, wheat, corn and oats, the increase of butter and cheese has gone steadily forward, and the dairymen are compensated in a greater degree than these figures indicate, for with grain-raising has come a more prospereus farming, better stock, bette yields, and for the present we will say better butter, hence enhanced prices.

The New England pioneer to this state was not forgetful of his butter and cheese and so part of his personal property brought to Ohio was the family cow, and to reduce traveling expenses the western emigrant often yoked together two cows, anc they upon the journey held the doubly important position of load team and dairy supply company, limited, upon the long, six weeks' journey.

As may be inferred, the increase of stock kept apace with the clearings, and ever prior to the war of 1812, the production of butter and cheese had become so genera that the inhabitants were amply supplied, and as freight transportation was unknow d of money there was none, the idea of markets was not yet considered, but six ars later the production had so outgrown the bounds of local consumption and bar- that consumers must be sought, and most unexpectedly and welcomed did it come market—and a return in hard gold dollars.

In the year 1818, an Aurora boy, 19 years old, stood in the market of New Orleans, d saw an English cheese sold in pounds and half pounds for one dollar in gold for ch pound. His idea when he left home was to float down the Mississippi as a boat nd, and at New Orleans ship before the mast for South America. The sight of the eese brought up visions of home, and the cheese there unsold; and why not become heese merchant, instead of a common sailor? was his next thought. Six weeks er saw him at his home. Quickly buying three tons of cured cheese at 2 cents per und, payable in one year, he by wagon transported them to Beaver, Pa., upon the io river, 120 miles distant, and loading them upon a flat-boat. turned his boat and tunes into the stream, and started for the south. To the dairymen of Ohio that at carried more than cheese. Its success meant market, money and prosperity; its lure would be worse than a calamity!

Six months later young Baldwin came back. He had sold every cheese; he paid ery man in gold; and, more than that, he wanted six tons more, and for it he would y three cents cash.

The average citizen of the Western reserve knows a good thing when he sees it, d what is more to his credit, has no hesitency in his ability to equal any occasion grace any position, from cow-boy up, ane hence there was no lacking of other per- ns who imagined themselves competent to open up new avenues of trade, and within years not a village or trading-post south or west but had witnessed the arrival of Ohio man with a cask of cheese. And it was an Aurora boy, not yet having ched his majority, who took a cargo of five tons of cheese around the Lakes to Ft. earborn, now Chicago, and finding no sale there, transferred his stock to the Indian ding-post of Milwaukee, and finding no place to store his goods, built the first me building erected in that city—a cheese warehouse—where fifty years later a gnificent dairy fair was successfully held. In 1825 the completion of the Erie canal ve Northern Ohio a market—placed her in competition with New York State, and aranteed the disposal of dairy produce for all time, and that the state profited by it, d has amassed wealth—and may I not say in addition, education, intelligence and operty as a sequence, goes without saying.

Ohio has clung to tradition, and may yet triumph in holding to it, the making of tter first, and making the residue into cheese, and when the attempt was made to persede home chesse making by the gathered curd system in 1850, its failure was e, no doubt, to the excessive acidity caused by making the curd of too aged skim lk, and no art then practiced could correct it, and the system was an utter failure; r was the next step attended with better results—the weekly delivery of home- ade cheese to a central curing house, so that of all the attempts to improve existing nditions, each failed, and the first grand advance was not made until 1862, when io borrowed what she might have originated herself—the factory, or patron system dairying.

It is a matter for self-gratification that the western dairyman can say that he rted out in his new profession and from the start avoided the ruts that blockade e advance of the eastern dairyman, and while he may make butter and cheese from e same milk, he does it by a centralizing of material, that gives him a decided ad- ntage, especially in uniformity of products. The western man brings his material gether and then separates his butter from the cheese, and hence has but one grade either, while the Ohio man, clinging to the old traditions, must per force do his n skimming before sending his milk to the factory, and the result is seen at any untry store, in butter of as many grades as makers, and the factory product show- g no two days' cheese alike in texture!

In 1866 an innovation was made by the Hurd Bros., who put in successful working nilk-buying factory, and designed for twice per day delivery, and clung so tenac- isly to their purpose that they banished the skimmer from the farm dairy, and now eir plan is adopted by the Straights, Hurds, Snows and Horr, but yet it is only lim- d to probably not more than 40 factories in the entire state.

Fifty miles south of Cleveland, the Cuyahoga river makes a sudden bend and flows nost due north to the lake, dividing the great dairy region of Northern Ohio into o sections, and the dealings of the Jews and Samaritans were quite as extensive as re the commercial transactions between these two sections, and their methods may considered quite as different. Carried a little farther, the milk-buying section may detached from the eastern territory, and we then have three territories that need separate exhibit of methods. In the Wellington district, the farmer takes his milk a factory owned by a great cheese dealer, who receives it, makes it up, and sells it, urning the proceeds, save making, to the farmer, who gladly takes it; the whole nsaction depending upon the honesty and integrity of the cheese dealer. In the tral section, the milk buyer sets the price for milk monthly in advance, which is a trifle different, inasmuch as the farmer knows what he is receiving, and his revenu are paid each month instead of at an indefinite period. In the eastern section the fa tories are run upon the half skim system. The good housewife makes the butter home, trades the butter for calico and sugar, and the cheese is sold to chance buyer or consigned to New York commission men, the returns of which quite often come b the large-heartedness of commissioners in bankruptcy. Thus it will be seen that th Ohio dairyman has little if any voice in arranging the price of his products, and pe haps never will until forced to see the value and advantages of the Board of Trad system of sales, a plan which, by the way, has found no favor, and the three attempt to organize them have proved signal failures, simply from the fact that the dairyma has been educated into the habit of having prices nailed upon his gate-post and ther to remain until the same obliging hand posts a new one with a change of values, quit as likely to be up or down; but the establishing of several cream gathering butte factories for the Reserve has had a beneficial effect, and there has been a greater valu in milk this season, the price at present being 17 cents for 10 pounds of milk, while th creamery men pay 35 cents per inch or gauge at the adjoining butter factory.

From all this it must not be gathered that Ohio is wholly conservative and is mak ing no progress forward, along with the dairymen of other sections of the countr Unlike the East, she has not adopted Jersey cows with much judgment, nor attempte salad oil cheese upon a wholesale scale. Indeed, it is quite probable that not a adulterated cheese is made in Ohio. City dairymen who live near slaughter house are the only ones who make suine butter. We are taking kindly but slowly to th cream-gathering system, a system that may be said to be on critical trial. All thes we have yet to adopt in whole or in part, but that Ohio is having modern tendencie of thought, we may discover if we take a close observation across the dairy districts

At first we may take a look at Ohio's dairy stock, for in respect to dairy cows there is a tendency towards better stocks and more gratifying revenues. For year the dairyman paid no attention to the breeding of cows, and the main dependence o supply was the woods of Michigan and the Dutch settlement in central and souther Ohio, but when from scarcity the prices rose to fabulous sums, the farmer began t raise his own stock, and with this change came a desire to improve breeds; but high priced imported cows have found no favor, and hence the dairy cow of Ohio is yet native, and is likely to be, for the improvement sought has not been extended beyon the saving of a few of the best heifer calves, and the doubly important part of havin the sire have an ancestry of undisputed qualities is not recognized, but, notwithstanding it is the truth that this very native cow has given us our reputation, and so evident is it that they are putting money into the pockets of their owners, that the industry is being extended as has no other of our agricultural pursuits, and the of quoted assertion that farmers are "keeping their native cows at a loss" finds but fe believers, and the writer who affirms that the Ohio dairy cow does not exceed $2 would hardly be able to find such a dairy, but would be enabled to find dairies by th score whose factory account would amount to $50 for each cow. So far the importation of Jerseys and Holstein stock has been very limited, and sales are very seldo reported.

Recently a herd of a dozen Fresians or Dutch cows were brought into my neighborhood at a cost of about $400 per cow. Bought in Holland with special referenc to their milking qualities, I had no difficulty in locating a dozen of our native cow whose record for ten days was the full equal of theirs, with one exception, and as th official report of this individual cow was 99 lbs. for one day, and 940 lbs. for ten days no attempt was made to furnish a parallel.

Why does the Ohio farmer cling so tenaciously to the native cows? This nativ stock is hardy, vigorous, and does not often require to go into quarantine, and her mil product is so far a fair average, and if the individual performances of the best cow were given, it is quite possible that results might be obtained that would be regarde as quite phenomenal, but as it is "field operations" that give the dairyman hi money, but little attention has yet been given to the science of having one cow, by great yield of butter or cheese, "tide" a whole dairy to fame and fortune to th owner, and the improvement in stock for years to come will result from breeding th native cow up to the requirements of the dairy, and selection will, with the weedin out process, be the tendency in Ohio. It must not be taken as accepted that the Ohi dairyman argues against improvement in stock, but actually desires it, but as yet ha found no actual betterment. Have any of the foreign breeds in their succeeding generations, shown any improvement over our existing, acclimated stock, that is actuall part and parcel of our soil? Perhaps the most noticeable change that is taking plac is the practice of winter dairying, and its accomplishment will have a most importan bearing upon the markets, for when this makes one half of the fifty-six millio pounds of butter in the six winter months an equalizing of products to other portion of the year will ensue, that will make the extreme range of prices from summer t winter, more equible and satisfactory. The success of winter dairying in the Wes has opened the eyes of the farmer farther east, and he sees that unless he changes hi

ethods and makes his cows produce when products are the highest, his western
al will supplant him in his summer market, simply by having occupied his ground
the winter, and by making butter in winter he has changed the plan of summer
ofit and winter expense to one of continuous income. The idea of winter dairying
s by the very nature of things become part of the system of Ohio dairying, and I
ay be pardoned if an enumeration of some of the reasons are given, although they
ay be antiquated in a community as progressive as Northern Illinois. Year by year
e taste of the people is becoming more cultivated in regard to butter as a table lux-
y and it is found that a fine article of butter, although very high-priced, is not with-
t consumers, but on the contrary the better the butter and more uniform its fla-
r and texture, the greater the demand, and a freshly made article is always sold in
eference to that made months before, so that the production of a high grade of winter
tter to meet the demand that offers a fancy price for its making, will tempt the
iryman to engage in winter dairying, and the establishing of cream-gathering but-
r factories in Ohio, and the changing of many a summer factory into an "all the
ar round" concern that offers city prices for milk, presents inducements to engage
the business, that are quite impossible under old methods, and when once success-
l the plan will be continued, and why not?

In Ohio the forests have been so far cut away that cutting wood, splitting rails,
d lumbering has become obsolete, and what besides his chores does engage the at-
ntion of the farmer in the winter? Why should he not raise a thousand bushels of
rn in the summer, and in the winter make that corn, worth $250 in the market, bring
,200 in the form of butter? It is simply adding the labor of milking to the care of
e stock, which is absolute, and this our dairyman is beginning to see, and seeing,
t upon.

The building of new lines of railway last year, radiating from our most important
ties, has unexpectedly benefited the dairyman in a way he little dreamed. For
ars the larger towns have drawn their milk supply from the swill milk establish-
ents which have monopolized the milk trade, quality or health being wholly disre-
rded. In the competition for freights the roads have found that it is to their best
terests to foster a country milk trade and even to the running of milk trains; and
e result is that three-fourths of all the milk of Cleveland is now brought to the mar-
t by rail—a milk free from the fever and the pestilence of the stable, stables that
the past sent out milk and disease in the same can. This has stimulated the pro-
ction of winter milk, and the substitution of pure country milk is a more effective
ar upon swill milk than all the laws that can be copied upon the statute books. The
undance of a good article does not of a necessity imply that it must be sold cheap,
d an abundant milk supply for not only cities, but even smaller villages, is rapidly
gaging the attention of our dairymen, and new territory is each month being drawn
on, until this trade is already one of much magnitude. This is opening the eyes of
r factorymen to the tendency of the day. If the farmer is going to produce winter
ilk in paying quantities, they can afford to buy it at even city prices, so that the
tempt to run several factories in the state is being made the present winter. This
ay also introduce us to the cream-gathering system, for the building of some 25 of
ese factories this year, and their successful operation, brings up this in Ohio in a
ay in which it must be met, for the cream-gathering question is one that presents
o problems for consideration: Cheapened transportation, and, aside from the bet-
rment of the live stock upon the farm, it furnishes a tempting array of fine veal
lves and fat porkers for the butcher, and with it good round prices. The three
ems added making a total, when figured with the receipts of the cream, that cannot
equaled by the sale of milk—a sale that prohibits any of these features enumerated.
e prices of milk twice per day delivered this season—7, 8, 10, 11, 13 and 15 cents per
n pounds—does not realize as much as was obtained from the sale of cream at 20,
, 25, 27, 28, 30, 32 and 35 cents per inch for the corresponding dates. For the cream
ere was no charge for transportation, as was the case of the milk, $1.75 per cow.
nd those who fed their skim milk as it should be fed, found no difficulty in realizing
om $16 to $20 per cow for the milk.

The real thing that is "pinching" the home dairyman is to see his kitchen made
tter sold at 26 cents, and the creamery butter made in the same neighborhood, sold
the same commission house at 38, and he is at first disposed to join hands with a
iter in a Chicago paper, and say that it is simply a ring game, but finally thinks bet-
r of it and sells his milk to a creamery, and it is probable that within a few years
e more sparsely settled dairy districts of Ohio will be occupied by the cream-gather-
g systems, and the old districts will, in well-conducted factories with all the modern
pliances for butter-making, make as fine a butter as any state can boast of. I have
great expectances for Ohio cheese. For them the golden cream age of cheese has
ssed, and if they ever again attain to "full stock," it will be when salad oil is made
successful substitute for cream in cheese-making.

At your deliberations last winter I noticed that the question of once a day deliv-
y received a careful consideration, and to this I add that the once per day plan in

Ohio seems likely to go, though in its displacement it may make haste slowly, an that the butter-making as well as the cheese-making will soon be done at the factor there is no doubt.

The disagreeable features of having hog yards connected with factories, its deteriorating influences upon the cheese and butter, not to mention its noisome stench i a neighborhood, is one that has been held in abeyance by the estimated feeding value of the refuse of the factory in the form of whey and buttermilk. The problem ha been discussed in its every pase, but, like " Bancroft's " ghost so vividly portrayed b a political orator, it went down. A dozen plans are in vogue for its disposal. At th patron factories several ways are practiced, one to return the whey to the dairyman i his can, but as the milk drawer demands double pay, the profits resulting are smal Other factories establish a yard and keep one hog for each three cows. With th milk-buying factories the whey belongs to the buyer, and here the hog yard is maintained in all its development, save in a few instances, like the system of factorie owned by the Straights, the whey is counted of no value, and is either given away t be fed not nearer than one mile from the factory, or is run into the river, thoug under certain restrictions the farmers are allowed to obtain this whey. During th time the brain of one Ohio man has not been devising new tracks along old ruts i this matter, but with a scientific grasp of mind, has found a value to it, and so bega to devise means to extract the sugar from the whey. Whey, as it runs from the vats contains nearly 4 and 87-100 per cent. of milk sugar, an article of commerce that sell at about 40 cents per pound, and is all imported at that. All plans to get it in an economical manner have heretofore failed. The plan of Dr. Wittie simplified all. Retorts, vacuum pans, injectors, etc., were by his way unneeded. By the old proces the greater part of the casine in the whey was boiled into the sugar product an could not be extracted except by a most difficult process. The Doctor's plan obviate all this difficulty. His plan had furnished a solution of the utilization of the refus of one factory at least, and had at the same time obviated all of its disagreeable features. Shorn of all perplexities, it now remains to be demonstrated how extensive trade can be built up for this sugar, and if its cost can be so cheapened that, asid from its supplying the druggists' trade, where its use is so restricted owing to its scarcity, that it can be made to take the place of the so regarded objectionable glucose o commerce, it may become an important industry.

If my audience will take a little trip to an obscure Ohio factory, nestled securel between the bluffs of a little river, we will come upon the only whey, or rather mil sugar factory, in America ; a building 40 by 100 feet, two stories in height, is devote to the business. Two boilers of ten horse power each, furnish steam for engines pumps, rotaries and steam boiling, and the refiners. The whey from the factor some ten rods distant is brought in an underground pipe and discharged into a subterranean cistern. From here the whey is pumped up into the second story by rotary, and the work of manufacture commences. How to first dispose of the caseous matter was solved by first scalding the whey in huge wooden tanks by means of coil of steam pipe in the bottom. The centrifugal was used, but failed to throw i out; scalding and filteration was tried, but with no better results, and at last specifi gravity was employed as a separating agent, and the plan was a success. Muriati acid was added to the scalding whey, and casine, by the chemical change, becam lighter and floated to the surface, and the whitened mass is quickly removed wit scoops. The degree of heat employed is not allowed to exceed 180° and as soon as th casine has ceased to rise, the remaining whey is forced through filters made of cotto cloth to yet further remove the particles of casine that have been condensed into minute masses, but by the resistance of the fluid, been prevented from rising. Then th boiling takes place. The whey, now of a bright amber color, is run into long bo boilers made of pine plank, 18 feet in length, 4 feet in width and 12 inches in depth in the bottom of which are a dozen lengths of steam pipe fed by the boilers belo The boiling occupies several hours, and it is in this operation that the closest attention is needed. Whey will take on more or less acidity, and acidity is fatal to perfec crystalization, and a neutralizing agent to correct it is quite as likely to prove damaging as to benefit it, so lime cannot be employed. So far, chalk is best, but even tha fails in certain instances, so that ammonia (I do not speak with certainty, however is substituted, and the change sought secured. The boiling syrup closely resemble maple sap, both in appearance and action, and as it approaches the sugar stage i thickens and at a time when the gauge indicates a certain density it is drawn off and placed in the crystalizing tanks.

The mass is now of a very brown color, and its receptacle is a pine tub holding about three barrels. In crystalizing it has methods entirely its own. In the tanks little sticks are set in a perpendicular position, and to these the finest crystals of suga attach themselves (though the sticks are not always used), another grade forms i small irregular masses beneath the surface, and a third low grade falls to the bottom in the form of sediment, while upon the surface a substance forms that is neither sugar, salt nor ginger-bread, though resembling the latter to some extent. In three eks the crystals have become so hardened that they can be washed clear of sediment cold water, are then melted over, again allowed to crystalize, are then coarsely wdered and are ready for market. In the process there is a fractional loss of sugar that the realization of the entire 4 and 87-100 per cent. is not secured. Simplified this process has become, it is now possible for boiling to be conducted at any num- r of factories, and the crude product brought to a central point and there refined d prepared for the market. As to the cost of manufacture I cannot speak with thority, but can closely approximate. The cost of building and apparatus may be t down at $2,400. The labor of conducting, calls for two men at a salary of $3 per y; 500 lbs. of coal, costing 90 cents, suffices for fuel. The cost of chemicals is not rge, and the product is from 150 to 300 pounds per day for a 4-vat factory, the ex- emes being for the June and November makes. The present price of this sugar is cents per pound, but a large production would cause an over-supply for the requirements of the drug trade, and then it would have to be sold to the sugar refiners at a ss cost than imported sugars. If we are to suppose the whey supply of this factory question would reach 40,000 lbs. per day, we then have a product of 1,200 lbs. which sold at 8 cents, would yield $96, while double the help of this establishment would ample for the enlarged concern. Two items then have to be considered in addi- on: Royalty and cost of whey. Upon this process Dr. Wittie holds a very far-reach- g patent, but as he is a man of very enlarged views and sees that this milk sugar dustry will soon exceed the demands of the drug trade and become one auxiliary to e sugar trade. he will be very humane upon the royalty. The price of whey is 50 nts per cow for the year. What the prices may be, and under what conditions it ay have to be purchased, is a matter of speculation, and will be governed by the me laws of supply and demand that controls exchange in general.

I wish it to be understood in this matter that I am in no way connected with this tablishment, other than to wish it success, and how can I do otherwise when for 17 ars I have been furnished, morning, noon, and night, with the free perfumes of a ctory hog yard, in which no element to contribute to its odorous success was want- g, when now the sugar factory in its stead gives no sign of its presence.

The purchasing of cheese by local buyers has grown into great proportions upon e Western Reserve, and there are several buyers who gather up by actual purchase om 40,000 to 75,000 boxes of cheese each season. At Wellington may be found the e great market of the Reserve, a place that has centralized the business of the west- n part of Ohio, but in eastern Ohio no such conditions exist. The Straights with eir system of milk-buying factories, bring all their cheese and all their purchases a central place at Hudson for curing and shipment. Hurd at Aurora with his sys- m of factories, ships from factory direct to market, though at his home factories he s great curing-houses, and he often purchases the entire season's make of twenty more factories in addition, and sometimes he makes a "field day" of it by having ese bring their cheese upon certain days. One day I counted 78 teams, each loaded ith cheese, awaiting their turn to unload; the purchase money that day paid out to airymen amounting to $15,500.

The gradual extending of the territory of the milk-buying factories is not lessen- g the operations of the cheese dealers, only changing their methods—that of buying e milk instead of the cheese, and renting the factory in which to make it up. Some e asks: "Do these milk-buying factories make better cheese than the patron fac- ries did with their once per day delivery?" Yes, and no. They are perhaps more niform in quality without raising the standard. The tendency of Ohio is unmistak- bly towards a high grade of factory or creamery butter, and these milk-buying fac- ries, by transferring the butter-making from the house to the creamery, have raised irectly the mass of Ohio butter, and indirectly, perhaps, benefited the skim cheese. he full cream cheese, as a quotable article of manufacture, has disappeared, and the gns of the times are that Ohio is to make her fight to regain lost supremacy with a igh grade butter. Should this tendency develop into a settled method, as now seems kely, the result cannot be one of doubt.

One of the gratifying tendencies of later Ohio dairying, is increased interest in airy education. Evidently the time is past when the boy can one year drive a milk am and the next "boss" a factory. No system of manufacture can be successfully r uniformly conducted by persons who do not even know the primary elements of e material which they manipulate. Ask the average cheese-maker to name the even principal elements that compose the fluid called milk, and he would call a halt t "butter and cheese," and potash, soda, salts, magnesia, phosphorus and lime, their roportions and their influences, would be an incomprehensible detail. Examined as the respective varieties of cheese, it will often be found that our foreman can give no lan other than that he held his curds in the whey until acidity was developed, and en he knew he was safe!

The increased demand for high grade butter has forced the factory owner to em- loy better help. and to avoid total loss, skill founded upon absolute knowledge is re- uired, or else these "skimmers" will be worthless. With Ohio genuine skims selling in New York at from 2 to 5 cents, cheese made in Europe from milk scarcely be ter, sells at four times the price, because the maker knew the exact working of h curds, and how to handle them to obtain results other than the one unvarying rul Individual experiments upon a scale sufficiently large to test the truth of a theory, a often an expensive knowledge, and to-day the great crying need of the dairy is a go ernment dairy school, to conduct these experiments and verify discovery, and educa men to handle dairy products. When our legislators come to understand that a gre national industry like the dairy, that represents an annual transaction of $500,000,00 is quite as likely to need an appropriation to maintain it (!) as a $19,000,000 harb bill, not quite so many of them would get snowed under by the votes of their consti uents. While the quality of our butter has been raised largely by intelligent unde standing of principles governing the work, the raising of grain (which is now large fed summer and winter), newly stocked pastures, clovers and standard grasses no find a prominent place in pasture and meadow. With their benefiting influences th day of special localities is not counted upon as arbitrarily as it once was, and scienc and skill is now demonstrating that, other things being equal, one natural grass-pro ducing district is the equal of another. The English Cheshire cheese can be duplicate in Wisconsin, and maybe in Illinois, and with equal education there would be n eastern or western butter as indicated by texture or flavor.

Not for one moment would I be understood as saying that the dairy industry wa only represented by ordinary intelligence. Far from it; for with such workers a can be named by the score, who are working and moving forward the car of progres ultimate success must come, but the need is more and better diffused intelligenc skill, and thorough education in the business, with a national dairy school, with stat experiment stations to locally verify the general work, with state and local associa tions to scatter and plant the good seed and nurture it, a grand possibility is befor American dairying, such a possibility that there shall be greater need of a secretar of the dairy in the president's cabinet, than a secretary of war or of the navy. Th West is to be congratulated upon its magnificent attainments in the dairy industr and here to-night I add my words of commendation, and close by saying that Ohi looks upon Illinois and the West not as rivals, but as co-workers whose industry mag nifies and exalts a nation.

Following the above paper Col. Curtiss, of New York, spoke briefly on swe cream butter and sweet curd cheese, advocating the manufacture of both if a mark was found for it.

Dr. Tefft—Will sweet cream butter have as good flavor as slightly acid crea butter?

Col. Curtiss said he believed not.

Question—Will it sell for as much in the general market?

Answer—Those who regulate the products do not know the difference.

Question—Which yields the most, sweet or sour cream?

Answer—Probably the sour cream, because you get more cheese.

T. B. Wire, of Ohio, said he knew men who were making more money from swee cream butter than those who made from sour cream, and so with cheese.

On motion, adjourned to nine o'clock

THURSDAY MORNING.

On assembling for the morning session the President appointed the followin Committees:

On Finance—J. F. Coe, N. P. Wilson, O. S. Cohoon, George Chamberlain, W. B Hostetter.

On Nominations—C. H. Larkin, C. C. Buell, H. B. Gurler.

On Dairy Apparatus—T. H. Baker, John Gilbert, T. R. King.

C. C. Buell extended an invitation to delegates to visit the Sterling Business Col lege.

On motion, the invitation was accepted.

D. N. Foster moved that a committee of three be appointed to present resolution relative to pleuro-pneumonia. Carried.

The Secretary read an invitation from Hon. George B. Loring, Commissioner o Agriculture, asking the Association to send delegates to an Agricultural Conventio to be held in Washington during the month of January, 1883.

W. R. Hostetter moved to refer to a committee to report. Carried.

The programme was then resumed in regular order.

ABORTION AMONG COWS.

BY W. R. TRUMBOWER, V. S., STERLING.

There are undoubtedly many subjects in connection with your business as dairy- n which enlist your attention; but none, in my opinion, which more fully deserve han that of protecting your herds against this accident or disease of abortion.

We possess no statistics of the frequency and extent to which this disease prevails ong the cattle of this State, or of the Northwest, and in fact very little has been itten about it in this country. By abortion a very considerable percentage of the ing are lost every year, and all cows which have once aborted may become unprofit- e as breeders for several successive years, hence lose a part of their original value, ich, in some instances, may represent quite a large sum of money to the owner of ch animal.

Now, let us see what we have been able to learn of this disease, and, if we cannot some protective measure to lessen its ravages.

It is a well known fact that a large number of external circumstances, such as ding with improper food and the like, can produce abortion. This form of abor- n, although often acquiring great extension, is what we call sporadic, or accidental ortion, in opposition to the infectious abortion, which is produced by infectious tter. The latter form of abortion receives the more attention at the present day, d is of very great importance to agriculture. We will consider some of the causes sporadic abortion, in order to get a better understanding of the nature of the infec- us variety.

It is known that all stimulants producing a contraction of the womb, can finally d to abortion.

A very important fact is, that the womb, even in the various stages of pregnancy, ssesses a different degree of irritability, and that an unimpregnated womb can only contracted through strong irritation, whilst the least irritation is sufficient to pro- ce this effect upon a pregnant womb.

It is known that the irritability of the womb proportionally increases as preg- ncy advances, and that those irritations which are always found to be present ally lead to contractions and natural birth.

We know, also, that the irritability of the womb increases with the temperature the body, and decreases with decrease of the temperature, within physical limits.

It is also known that the contractability of the womb can be excited through car- nized blood. From this it may be understood that under all circumstances where temperature of the body is being continually increased, and where highly carbon- d blood is being formed at the same time, abortion is liable to occur. By quick vements, over-driving animals in pregnancy, and in morbid conditions where the cretion of carbonic acid is rendered more difficult, and where a higher temperature existing, the case is the same; for example, by tuberculosis, pleuro-pneumonia, lenic or Texas fever, epizootic, catarrh, etc.

The frequent abortions following these conditions are easily explained.

Colic and bloating are also often followed by abortion. Its origin is not so much pendent upon the large expansion of the intestine or rumen, as in the retention of rbonic acid.

Atmospheric influences, sudden changes in the weather, have been mentioned as using abortion. There can be no doubt that cold, especially when suddenly applied the skin, may produce this result, and hence it is that the abrubt setting in of cold ather is often marked by abortion among animals exposed to it.

Frozen food or water, when taken in immoderate quantity, and especially when e digestive organs are nearly empty, as well as forage or herbage covered with snow frost, are also injurious in this respect to pregnant animals, and abortion often llows immediately.

Abortion is frequently caused by the partaking of blighted food. Some parasitic ngi, which are found upon cereals, are said to cause it.

Purgatives, especially those of a drastic kind, are a fertile cause. Opium, digitalis d some other drugs, have to be administered with caution.

Certain colors, the smell of blood, decomposing flesh of animals, excitement, fear, under and anger are also causes.

Abortion has not unfrequently been ascribed to some defect or other influence in e male, usually supposed to be found in the debility arising from too frequent age.

Various injuries to the fœtus, or diseases of the fœtus or its envelopes, may also ad to abortion.

That specific cause of abortion, which we designate infectious, differs in its natur and history from abortion occurring in sporadic cases, more particularly from it attacking all, or nearly all the pregnant cows on a farm, stable or pasture, over a wid district, or even throughout a whole county for perhaps a succession of years, thu constituting itself a veritable scourge to agriculture.

If we attempt to study the causes which have been alleged as operating in th production of epizootic abortion, we are baffled among conflicting statements an opinions. Many writers have mentioned those causes which have been already enumerated as producing sporadic or accidental abortion; while others have taken int consideration those influences which may give rise to the accident, as well as thos which may propagate the disorder.

With regard to general causes, it is remarked that the disease is most frequentl epizootic, in wet years, when it is probably due to anæmia, as well as to forage damaged by moisture, ergotized or otherwise altered. This adynamic condition of animals, brought about by the weather and food is, in the opinion of Zundel, particularl favorable for the multiplication of microphytes, microscocci, and bacteria in the genito-urinary mucous membrane, and these are regarded as the principal local cause of this kind of abortion.

So long ago as the end of the last century, says Fleming, contagion or infection was believed to play the principal, if not the sole part; for it was observed that when a cow aborted in a place where other pregnant cows were kept, these would abort in succession until all, or nearly all, had miscarried. Not only this, but it has often happened that a newly-purchased cow in calf has been introduced into a farm where the cows had always calved favorably at the proper time; and when the stranger has aborted, first one, then another, then a third, and so on of the others have experienced the same misfortune, and the malady has persisted in the same place for consecutive years.

Again, when pregnant cows which were living in a place where the disease had not existed, have been introduced into a stable where it prevails, those that are at the end of gestation calve regularly and normally soon after arrival, while if they are a certain time in the infected stable before this period is reached, they abort like the others.

The insalubrity and bad hygiene of cowsheds and stables appear to have no influence in the production of the accident, as it appears quite as frequently and readily in well-regulated stables and farms as in those of opposite conditions; in fact, nothing can explain the occurrence of enzootic abortion except the presence of a contagion.

While the question, whether there is actually such an infectious matter existing must be answered in the affirmative, yet we soon become aware of our own ignorance, by attempting to answer both these questions: "What is the infectious matter producing abortion, and where does it originate?"

Numerous experiments have been made to discover this infectious matter, and to produce abortion by conveying it into the bodies of healthy cows.

Franck, of the Munich Veterinary School, has established by microscopical investigation, that on the lining membrane of the vagina and that of the vulva, there is constantly found a minute fungus, mixed with mucus, the "Leptothrix vaginalis," in every respect similar to the "Leptothrix buccalis" found in the mouth, which, according to Hallier of the University of Jena, is only an allotropic condition of the ordinary molds, being, in fact, a kind of bacterium. Towards the period of calving, these bodies become extraordinarily abundant, and they appear to concur in the decomposition of the fœtal membranes and their expulsion; when the membranes are retained and putrify in the womb, they are extremely numerous.

Franck has shown that by smearing the vaginal passage of a pregnant animal to a certain depth with the matter from the expelled membranes of one which has been delivered, abortion can be induced.

Bauer, after finding bacteria in the vaginal mucus, and in some cases in the afterbirth of an aborted fœtus, attempted to produce abortion experimentally. He brought small quantities of mucus into the vagina of several cows, and as the result they aborted in from nine to fifteen days.

Dr. Salmon, of North Carolina, has also found the bacteria to exist in great numbers among the discharges of cows which had aborted.

"So that," says Zundel, "it is sufficient to introduce into the vagina, micrococcis or bacteria, which multiply there, and penetrate to the womb, commence their work of decomposition, of which abortion is the consequence."

It has been remarked that, in general, the fœtal membranes are liable to be retained in cows which abort, and that when not removed artificially, they only come away when decomposition sets in. The influence of these putrifying membranes has been noted by many veterinarians, who imagined that the putrescent emanations infected the system of the animal breathing them; but Zundel thinks it more probable that direct infection takes place by the genital-mucus membrane. In support of this he quotes the observations of Roloff, who asserts that he always saw the disease accident developed in stables where the distance between mangers and drains was iall, or where the drains did not have sufficient fall, whereby the hind-quarters of the ttle were readily soiled by the excreta in them.

Without, then, going further into the question, and without taking into consider- ion other agencies which may cause extensive abortions, such as ergotized grasses, may be concluded that this kind of miscarriage is transmissible through the medium some infectious principle, which is specific in its nature; for it is not necessarily ied to putrefaction of the fœtal membranes; and it always produces the same effect abortion—without any other apparent efficient cause being in operation.

It is rare that this kind of abortion occurs before the third or fourth month of station, more frequently it is at the fifth or the seventh month, and even later.

There are no premonitory symptoms, except a trifling uneasiness for a few hours eviously, and sinking of the flanks and descent of the abdomen; the animal gener- y looks well and hearty, and yields its supply of milk as usual. It is rare that the ptured membranes are rejected immediately after the fœtus; as a rule they are arly always retained, particularly where gestation is advanced, and they decompose the womb, being expelled only in shreds at intervals. Then the animal loses its petite and condition, goes off its milk, and sometimes perishes, as a consequence of is placental restriction. If it recovers, heat appears unnaturally often, though con- ption is unfrequent and sterility common; and on the other hand, there are some imals which expel the membranes promptly, conceive soon after, but again abort readily—perhaps three times in the course of a year.

The fœtus is usually dead, though when it is expelled after the fifth month, it ay be alive, but is weakly and soon dies, even when born near the termination of egnancy. Those which are dead when expelled exhibit indications of having ceased live a short time previously.

All the animals on a pasture or in a shed where the disease prevails do not abort the same time, but at intervals. When one aborts, another, its neighbor, perhaps, pears to prepare for the event, which occurs usually in about eight days; then some ys after this it is the turn of another, and so on, until two-thirds, or perhaps even l of the pregnant cows beyond three months' gestation have miscarried.

Instances have been known in which a pregnant cow, leaving a shed in which ortions prevailed, and transferred to another where the accident had not been seen, ould remain healthy for some time, then suddenly miscarry, and in the course of ten fifteen days other abortions would occur in this shed, testifying to the danger of eping pregnant cows in contact with, or in proximity to, those which have miscar- ed in this way. It has also been stated that an animal which aborts has always a ndency to do so again.

But it has been observed that if cows are well fed the period of gestation after ch abortion is often longer; so that if a cow aborts the first time at six months, it ill do so again at the seventh month, and the third time a little before the ninth onth, reaching its full period in three pregnancies.

TREATMENT.

If the malady is suspected to be due to any one particular cause, or if there exist edisposing causes, then the indications for the prevention or cure of the diseased ndition are obvious. If, however, we admit the most common and efficient cause be infection, that abortion is due to the presence of an agent transmissible from an fected animal, or something that has belonged to it, to another in health, then the st and fundamental indication is to remove or isolate the source of mischief. When, erefore, abortion occurs, and there is reason to believe that this accident is in its ture infectious, the fœtus and all pertaining to it should be removed as promptly d completely as possible from the shed or place in which the animal is located. The w herself should also be removed and kept altogether isolated, or at least away from l other pregnant cattle, with a special attendant employed to look after her; this tendant should not go near the unaffected cattle, and the droppings of the cow ould also be kept carefully out of their way.

The shed from which the cow has been moved, and which contains other pregnant ttle, ought to be immediately cleared of all manure and other matters of an objec- onable kind, the drains, floor and stall thoroughly washed and sprinkled with some od disinfectant.

The shed or stable should be well ventilated and disinfected for a number of days. he best disinfectant for this purpose is carbolic acid or sulphuric acid; with the tter, Dr. Salmon has succeeded in eradicating the disease in stables where it had evailed for some time. He uses three pounds of sulphuric acid mixed with forty allons of water, and completely saturates the stables and articles with which the imal has been in contact.

The animal which has aborted must also at once be attended to. If the mem- ranes have not been expelled, which is most frequently the case, they should be removed as early as possible and not allowed to putrify; their removal should effected by the hand, and a weak solution of carbolic or sulphuric acid should injected into the vagina and womb.

The membranes themselves should be destroyed or buried, and the cow shou not be allowed to go near others which are pregnant so long as there is any dischar from her. For safety, the period of isolation should extend from eight to fifteen da The animal may require good nursing in the meantime, and she should not be put the male until every trace of irritation in the generative organs has disappeared.

When cows show any symptoms of impending abortion, they ought to be prompt removed from the vicinity of others which are in calf.

Should epizootic abortion be traced to the food, ergotized or otherwise damag fodder, of course this must be prohibited and a change resorted to. If the pastur are ergotized then the pregnant animals must be removed from them and placed more favorable conditions with regard to food.

Whenever or wherever the accident occurs, whether at pasture, straw-yard or shed, it must not be forgotten that the greatest possible care should be taken to isola the animal, and to bury everything—fœtus, membranes, etc., as well as to destroy a traces of discharge from the patient.

The chair then appointed the following additional committees:

On Memorializing Congress—D. N. Foster, H. D. Emory, C. F. Dexter.

To Receive the Governor—Hon. Henry Green, Mayor of the city; Hon. Jam Manahan, member of the legislature; E. W. Edson, J. G. Lumbard.

To Nominate Delegates to Washington Agricultural Convention—W. R. Hostette I. H. Wanzer, Geo. A. Addy.

The programme was again resumed:

SELECTION AND ADAPTATION.

BY COLONEL T. D. CURTIS, OF NEW YORK.

The principle of selection is one running all through Nature. She bestows h favors on the most vigorous, and leaves the weakest to perish. Hence, as Darw phrased it, "the survival of the fittest." This is true in the vegetable as well as the animal kingdom.

Why are weeds so tenacious of life? Because, through all the long years of t past, the weaker have constantly perished and the stronger have survived to furni seed for future crops. So much vitality do most weeds posses that it almost appea as if evil everywhere springs up spontaneously while the good can be perpetuated on with the greatest labor and care. This is because the lower order is indigenous a naturally takes precedence. The newer and higher is always an interloper, and has get a footing by conquest. Hence the struggle to keep down the weeds and grow t vegetation most useful to man in their steads. The common grasses are the ne order above the weeds, and these we can make take possession of the soil with com paratively little trouble; but when it comes to the cultivated grasses, as the cerea and Indian corn, we find it more difficult to substitute them in place of the weed But there is reason to believe that, with careful selection of seed and thorough cult vation of the soil, we can in time make the useful plants grow as spontaneously a vigorously as the obnoxious do now.

Nature is not only discriminating and partial to the best, but she is progressiv From the lower, through selection, she evolves the higher, and continues this proce to the highest. A glance at the revelations of natural science shows this. To th extent, at least, the doctrine of evolution is true.

So we have but to imitate Nature. The principle of selection, operating throug the agency of man, will continue to produce similar results; and what has been do in a long time, through the slower agencies of Nature, can be done in a short tim through the quicker agency of man. Through man, Nature will work more discrim natingly and directly, and reach results more expeditiously if not more certainly. W have but to follow her promptings, and reap the reward.

It should be constantly borne in mind, however, that Nature employs anoth great principle in accomplishing her work. She not only selects, but adapts. Th principle of adaptation—which is a sort of selection—is everywhere manifes Every spot of soil, where man has not interfered, has on it the exact kind of veget tion which it is best adapted to produce. The soil is suited to the vegetation, and th vegetation to the soil. This fact merits our most careful attention.

Again, animal life everywhere on the globe is the best adapted to the section an

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cality where it is naturally found. The waters and the dry land, the lowlands and e mountains, the torrid and the frigid zones, all have their special adaptations of imal life. Nothing is misplaced. We do not find white bears and seals at the uator, nor crocodiles and elephants at the poles; but each class of life has its home here it is most convenient—all through natural adaptation.

The principle of adaption is one that is at all times and everywhere applicable in rming. We might as well expect figs of thistles, and grapes of thorns, as to expect field to grow a crop not adapted to it. One of the first things to find out is what ops are suited to your soil—not only to the farm, as a whole, but to every part of it. any failures come from attempting to grow the wrong crop, and from applying the rong fertilizer. There must be perfect adaptation of crop to soil, and fertilizer to rop, if the best results are attained.

But how does all this apply to dairying ? The principles of selection and adaptaon are applicable everywhere on the farm, and in nothing more so than in the dairy. et me, however, further illustrate the application of the principle of selection. Many ilures have come from neglect to properly apply this principle. Prof. Saunders, of e Agricultural Department at Washington, tells us that "Most of our cultivated ces of plants have run into numerous varieties, many of them comparatively worthss." He adds : "A test of their exact merits, with the result of discarding those of ferior merit, would be the means of throwing from seed lists and catalogues many orthless things." Prof. Blount, of Colorado, who has paid a good deal of attention the cultivation of wheat, gives a brief summary of known results in the production wheat and corn, growing out of careful selection and proper cultivation. He says at well-authenticated records and reports show that 102 bushels of wheat have been roduced on an acre, from broadcast sowing. By special culture, 108 bushels per acre ave been reached. One pound of seed wheat has been known to produce 791 pounds grain ; and one kernel of wheat, by division, resetting and extra cultivation, has een made to produce 576,840 kernels—and he gives the names of the producers and e places where produced. He also tells us that 206 bushels of shelled corn have een produced by a single crop on one acre. Then pertinently he asks : "Now, if ith a little science and extra culture, the capacity of wheat and corn can be strained p to these figures, is there not room for doubling the averages by the ordinary method cultivation?" The professor gives it as his opinion that, "By following the rules y which it is successfully carried out, and observing the natural laws that govern egetable growth, wheat can be made to double the length of the head and increase e grain 100 per cent. and its powers as much, while its quality will be so greatly imroved that one will hardly recognize it as being the same kind, after three years' imrovement." And he declares that "Seed wheat, as generally used now-a-days, is ardly fit for chicken feed, say nothing of using it for seed. It is degenerate, impure, ll of parasitic fungi, and simply ruinous to the farmer and to our health."

What should the common farmer do, in view of these facts? I will give the anser in Prof. Blount's own words : "Up to this date, there are in the United States ver 350 different varieties of spring and winter wheats. Among all these that have ecome standards, are found typical and genuine grain, true to name, which any rmer, with an eye to improvement and profit, must see in his ripening crop. This enuine grain, which is always found in the largest stools—those that come up evenly gether and ripen uniformly—he should select and pick HIMSELF, and sow on choice nd, cultivate, harvest and put away under lock and key, to be again sown, cultiated and harvested by HIMSELF, that no meddling can interfere and no mixing can ke place." In other words, select the best for seed, cultivate it in the best manner, nd keep it pure. Do this with all kinds of crops.

The same principle of selection applies in the breeding of stock. The authority hich I have just quoted declares : "In carrying out this system in the improvement f wheats, I adopt nearly the same rules and laws that govern stock men in breeding -and-in. The pedigree system does not in any way create new varieties ; it only nproves, making two blades, as well as two grains, grow where but a poor individual rew before."

But, before I touch upon the subject of breeding dairy stock, let me illustrate the nportance of the principle of adaptation—of adjusting means to ends. I will take e potato. It is important not only to select the best variety of potatoes, but to have und, healthy tubers of that variety, and to observe all the conditions required by ature.

At the New York Experiment Station, during the past season, Dr. Sturtevant as been making experiments and observations to determine the character of the poto and the best method of preparing seed for planting. Though the experiments re not yet completed—and may not be for several years—the results thus far are very teresting and instructive. They show that the potato wants a moist subsoil for the brous roots to feed in and a dry surface soil for the tubers to grow in. No matter ow deep the planting or how much the hilling, the tubers develop near the surface. ut the most striking discovery was in regard to the structure of the tuber, which is found to have a sort of frame-work on which the pulp, if we may so call it, develop The stem runs clear through the potato lengthwise, and from it branches run to th surface and expand into eyes. One of these eyes, cut obliquely toward the main ste and butt end of the tuber, so as to not sever its connection with the central stem c core, is found to be preferable to any other form of preparing the seed. If the eye severed from the core, it lessens the yield; and the nearer the surface it is severe the greater the decrease of yield. To repeat, and use Dr. Sturtevant's own languag —for we are all interested in the potato crop: "In every case the eye cut small pr duced later formation of tuber and fewer and smaller tubers than other seed use In the single eyes cut larger we noticed an increase in earliness and prolificacy ov the eye cut small. In the eye cut large and deep we obtained the greatest uniformit of plant, and the earliest, largest and most abundant supply of tubers to the stal In those cases where half potatoes, split lengthwise; were used as seed, we noticed lack of uniformity in the product of the different hills. An examination has show that where the vegetating eye was shortened in its depth, the yield was remarkabl inferior to that produced from the corresponding half of the potato where the vegetat ing eye was left at its full depth." These facts led him to look for their reason. H says: "We, therefore, by soaking slices of potato in carmine, succeeded in bringin out the interior structure through the staining of the tissues. This distinctly exhi ited the tuber as a swollen stem, each eye being a terminal bud on a branch, th branches running into a central stem. We thus were able to assign a difference i the character of the seed used, whether cut with reference to the quantity of potat substance, or whether cut with reference to securing length of the stem enclose within the potato substance."

It was further found that, no matter how many eyes there might be on a whol potato planted, only two or four of the eyes would grow; but if one of these eyes wa broken off or wounded, it would throw up a multitude of stalks.

Now, here are facts, not only of interest, but showing the importance of adaptin all the conditions and circumstances to the requirements of the crop—not only in th selection of the seed, but in its preparation, the choice of soil, and the mode of plant ing and cultivation.

But now let us come to dairy farming. In the first place, we must select a dair farm We must have a farm that will grow sweet grasses and furnish pure water— that is, water free from deleterious substances—and it must be in abundance, both fo use in the dairy house and for the cows to drink. We need not expect the best o milk from stagnant or impure water. Depend upon it, whatever is in the water o food consumed by the cows, will show itself in the milk product.

The farm selected, the next thing is to choose what line of dairying we shall pur sue. Shall it be butter? Shall it be cheese? Shall it be both? Or, shall it be milk fo market? Which ever we decide upon, we must select our herd, or breed it, accord ingly. In the beginning, of course we must depend upon selection; but we can selec with reference to future breeding.

What breed? That depends very much on location and other circumstances We must not put too heavy cattle on rough, hilly farms, which are often the best fo dairy purposes. We must have hardy animals for high northern latitudes. But ver much of the rigor of climate may be counteracted by proper shelter—and it alway pays to give animals good shelter and good feed.

In this section, very little depends on breed. You have neither hills nor specia severity of climate to be considered. But you do need to look well to shelter. Th bitter blasts blowing over your broad prairies cut to the marrow; and you will fin shelter cheaper than food for preserving a proper temperature of the animal body.

Select your cows from any breed you choose—for all breeds have good animals and all can be bred up to a higher dairy standard by a proper selection of individual to begin with. But be sure to select animals suitable for the line of dairying whic you choose so pursue. Do not depend upon the breed, no matter what it is, but selec the best animals of whatever breed you decide to begin with. Then breed intell gently toward the end you have in view.

Too much dependence has been placed, of late years, on what is called "bloode stock." No doubt blood tells; but if it ends in sky-blue milk, or a mess so small tha a kitten would starve on it, it is not fit to breed from for dairy purposes. The ind vidual qualities, as well as the breed, must be right. Then we may expect the goo qualities to crop out in the offspring, and even the offspring to improve, if good judg ment is used in coupling and favorable surroundings are kept up. But if there is any thing in the prepotency of pedigree blood, why should we expect a degenerate speci men to produce superior offspring? In truth, when you take the inferior animal t breed from, you begin breeding down, instead of breeding up; and if you continu long enough, you may reasonably hope to get something at least about equal to th scrub!

Breeding has been carried on, since the fashion of getting up booms in breeds ha been introduced, more with reference to increasing numbers than to improving th uality; and there is reason to believe that some importers have been governed by the ame consideration, and had more of an eye to speculation than to introducing better lood. So the marking and general appearance are right, a lack of inherent value, or ven of pure blood, counts for little. What they want is animals to sell. Their exibition stock is all right, and is expected to sell the inferior animals. Hence but omparatively few purchasers get stock that equals the show animals of those they urchase from. It is important, therefore, to distinguish between the honest breeder nd the speculator, and then to keep your eyes open and wits about you in selecting our purchases. Prepotency does not all run to good qualities; it perpetuates and inensifies the evil as well as the good.

A fatal error has run through all the breeding of the past, among dairymen, nd is still very generally continued. It is a lack of proper selection of males to breed rom. If a dairyman has an extra good cow, he is pretty sure to save her heifer alves, which very seldom turn out to be as good as the dam. The cow herself may e an accident, and greatly lack the power to impress her good qualities on her offpring. Added to this is the fact that one-half of the blood in the offspring may be hat of a villainous scrub male, and s almost always that of an inferior or very indiferent bull. The cow alone is depended on to give value to the calf. As well plant Tom Thumb pop-corn for a field crop and expect a big yield of dent corn, as to use a crub bull on a superior cow and expect a valuable offspring. Like produces like, nder favorable conditions; but when the conditions are bad and one-half of the productive energy is unlike the other, what can you expect, at best, but a mule or a monrel, and that of an inferior grade?

Too much attention cannot be paid to the selection of a male. He is one-half of he herd. His blood is one-half of that coursing through the veins of the offspring. This fact is favorable to the improvemeut of herds. The superior male impresses his uperiority on all of his progeny. This one animal, properly selected, secures imrovement, and so long as the male is superior, the improvement will go on. If he is nferior, there will just as surely be degeneration. This is the whole thing in a nuthell. Plant the right kind of seed, and you will have the right kind of crop. But if he soil is poor, it will be a poor crop; if good, it will be a good crop. Just so in reeding. If you use the right kind of male blood, you will have the right kind of offpring. If the dam is inferior, the offspring will be inferior to the sire; if the dam is uperior, then the offspring will be superior, or at least equal, to the parents. The ffspring of a superior bull, when the dam is inferior, will be, as a rule, superior to he dam. There is always improvement or degeneracy on the side of the male, just as he male is superior or inferior to the dam.

It is all-important, therefore, that the bull should be not only of a well-established reed, but of a well-established family of that breed, so that his get will be true to the ype of the family as well as to the type of the breed.

If both the sire and the dam are of this character, there is little difficulty or danger in perpetuating the good qualities of both, if all the conditions are favorable. You have but to continue to breed together the best, avoiding for breeding purposes all animals showing a tendency to weakness, offsetting the weak point on one side with the same point strong on the other—and not only will the herd be kept up to the standard with which you began, but the chances are that there will be improvement. If better blood is at any time introduced, it will surely make improvement,—but have great care about crossing. A bad cross will ruin all. But do not be afraid of inbreeding, however close, so long as you make proper selection. This is the way in which types are fixed and breeds established—every pure-bred Shorthorn, or Devon, or Ayrshire, or other pure-bred animal, traces its pedigree to the same sire and dam.

Breeds may be established in this way, or by crossing other blood on animals of a strong type, as was done on the farm of the King of Wurtemburg. Black-and-white cattle from Friesland were bred for whiteness until all the offspring were snow-white. Then on these were crossed at different times, two classes of Limburgers, both small, both giving very rich milk and a large quantity for the size of the animal. These were cream-colored. Schwytzers, which had for several years been in-bred on the King's farm, were also crossed on the white Friesians. The Schwytzers were dark brown, line-backed, of large size, strongly built and great milkers. Two other crosses were pure-bred Alderneys and Jerseys.

Here is quite a formidable mixture; but it was so managed that the Friesians retained their size and whiteness. This type was fixed in about 25 years, notwithstanding the crossings, and took the name of Rosenstein. At the end of 32 years they were seen by Mr. John S. Klippart, then secretary of the Ohio Board of Agriculture, but since deceased, and to him and Mr. S. Hoxie, secretary of the Dutch-Friesian Association, Whitestown, N. Y., am I indebted for these facts. Mr. Klippart says the aim was to create a new breed combining in a high degree superior milking qualities, early maturity, easy fattening, and endurance under the yoke. The effect of this crossing and in-breeding was to deepen the flank and lighten the shoulder by the Limburger and Alderney blood, while the Limburgers and Schwytzers added to the flow of milk, the Schwytzers also aiding to maintain the size. The weight of the Rosensteins is given as follows by Mr. Klippart:

	Lbs.
Calf on the day dropped	105
Heifer calf three weeks old	131
Heifer 20 months old	1,000
Heifer 2½ years old, not in calf	1,150
Cow 3½ years old	1,400
Work oxen 6 years old	1,550

He states that in 1858, this herd of Rosensteins consisted of twelve cows, which averaged 4,795 English quarts of milk per cow; the highest yield of a single cow being 5,896 quarts. In 1859, the herd consisted of twenty-one cows, which averaged a yield of 4,070 quarts per cow; the highest yield of a single cow being 7,705 quarts. The herd in 1860 consisted of twenty-four cows, yielding per cow 4,312 quarts; the highest yield of a single cow being 6,456 quarts. The milk was declared rich in quality. In the development of this breed, selection and adaptation were the underlying and governing principles.

This shows not only what has been, but what can be done; and we Americans can do it just as well as the German or Englishman. I know of but one successful American attempt at developing a breed, and this I have referred to so often that it is beginning to be an old story. It is that of Truman A. Cole, of Solsville, N. Y., who began 29 years ago with a splendid cow—supposed to be Holderness—and her bull calf. By the closest in-breeding ever since, united with careful selection, he has developed a breed of black-and-white cattle. They were at first pale red and white, and the calves when dropped are now red-and-white. His herd of twenty cows, always including some heifers, has for a number of years averaged 300 pounds of fancy butter per cow, and the calves sell readily for $100 apiece. Here is an example worthy of imitation.

In conclusion, let me ask: With these and the examples of the English breeders before us, and their experience to guide us, shall we always go on breeding in a haphazard manner and depend on imported blood for keeping up and improving the quality of our herds? Or, shall we have confidence enough in our own ability, and pride enough in our country, to strike out and establish American breeds adapted to our climate and to our needs?

CREAM-GATHERING IN OHIO.

BY JOHN GOULD, AURORA, OHIO.

Ohio dairying has passed through many seasons of depression, but like the Irishman's stone wall, "the more it was thrown down the higher it stood!" And it may be remarked in this connection that never before in its history has a year been more successful in the main than the past one, nor its future at any time more bright with expectations than now. The promises for the next decade indicate that the dairyman who will seek to inform himself, and attempt the class of goods the consumer demands, will for his pains obtain a recompense that few other industries can offer.

While the history of Ohio dairying shows many changes, and usually for the better, the new order of dairying that is now manifesting itself, not only by a most widespread inquiry from every part of the state, but in changing old customs and traditions by quite radical innovations, almost partakes of the nature of a dairy revolution. To-day the drift of Ohio dairying is towards the production of a high grade butter—actually creamery butter—to meet the demand that the market now insists upon; not the miscellaneous collection of a thousand dairies, the greater part being of either doubtful texture or quality, down to that of absolute worthlessness, but to the production of a butter of so high a grade that the simple brand of "Ohio Butter" shall be its "open sesame" to any market in the country. The state has the self-interest to see that the transferring of the manufacture of quite one-half of the billion and a half pounds of butter made in this country, from the kitchen to the factory, has resulted in a most remarkable rise in prices, and to be enabled to also reap some of the benefits of this rise, new methods would have to be introduced, and has at once begun to act upon the matter, and the effect is, so far as the change has been made, magical. The old conditions that once existed, now no longer have a necessary existence. Butter is now neither a drug in the market nor an article of export because it cannot be sold at home. The vast amount that we now produce proves inadequate to supply the demand, and we eat in addition all sorts of butter frauds and substitutes by the fifty million pounds, and are actually importing fine butter from Europe. What is the remedy? Ohio says: Increase the product, and instead of making inferior dairy butter that only comes in competition with oleomargarine, produce instead a creamery article, that only comes in competition with genuine butter, and that of high grade. To cling to the old method of farm butter, is but to invite disaster, for the western

U. OF I. URBANA-CHAMPAIGN

dairyman with his co-operative creameries, cheap grains and pasturage, will undersell us, even if the quality of his creamery butter was no better than that of our farm dairy butter; but if we imitate his methods, and force down the cost of production and manufacture and at the same time realize any increase in price owing to the bettering the quality, we may yet so secure our position that we can safely invite competition.

In Ohio, seventy counties are covered over with small dairies, containing from four to ten cows each, and even more in many cases, and the signs of the times are that these scattered, isolated dairies are to combine upon the co-operative or cream-gathering system of some kind and make a brand of butter so high in quality that it shall be sold in the great dairy markets for cash, rather than now at country stores for calico and store pay generally. I do not argue for exclusive butter-making. There is a place and a market for good cheese, and in the dense dairy districts butter and cheese can probably be made profitably, but it is in large territories not so situated that this cream-gathering system comes as a pioneer, yet in full development, to give two things: A better butter and a double price, and that with the elements of labor reduced to the lowest limit.

The economy of the time in manufacture is found in co-operation. The dairy is no exception to the rule, for at the start it leaves five-sixths of the bulk and weight of the milk product at home; and yet by the butter yield and the feeding value of the skim milk added, the results may be considered the full value of any combined butter and cheese process, and if care and skill are brought into requisition, the new system will show best results, as we may see if the two and two make four rule is applied.

In Ohio, three systems of co-operation, or cream-gathering, are in vogue: Cream buying, co-operative factories, and a value for cream based upon prices received for butter in New Yofk, minus five or six cents per inch, to furnish a working margin for the maker. The greatest number of factories are purely individual creameries paying a market rate per inch for cream, the prices varying with the months or the fluctuations of the market, but as this is a matter the organization or plan of working which, the Illinois dairymen are far better posted upon than we are in Ohio, we shall give no further heed to it, but go on and see if the article of butter, called in the market cream-gathered, is the equal of the gathered milk butter, and how far it may be rated as superior to farm or dairy butter. Theory would say that as good butter can —or should be—made at the farm as the creamery, and that the whole milk factory should produce better butter, but as theory and practice are often at variance, the cream-gathered butter has the advantage, and why we may safely argue as due to the following causes:

To make a first-class butter at a whole milk factory involves the strict compliance of more rules than the average farmer cares to observe. The milk should reach the factory perfect, but there is no certainty of its being so. At the milk factory, milk is the object of the farmer who produces it, and to him quality is not essential, so long as the measure indicates good yield, so that *fair* condition is about the only one rule that can be enforced. One dairy is well fed, petted, stabled, and soiled, pure water and wholesome food provided and fed with judgment and discretion; another "shifts for itself," chased by sharp biting curs, and thumped and knocked about generally; while a third gets a scanty living out of sour or swampy pastures, drinks stagnant water, and has other conditions to contend with that cannot be harmonized with a first quality of milk. The delivering of milk is a feature that operates against fine flavored butter. The milk of one farm is churned for miles as it is borne along over rough roads and on rougher wagons; the milk of another dairy is actually cooked by long standing in the hot sun. A dozen other features exist to reduce the butter value of the milk, among which mention might be made of cans that are actually open, getting the full benefit of dust, rain, flying spatters of mud, dirty blankets and hands, and the "smoking car" features of the passenger traffic upon all milk-wagon routes.

Over against this, what has the creamery to offer as an improvement? It shows an equal number of dairies with milk set alike in cans of the same pattern, and under conditions that may be accepted as uniform. This cream is collected every day by a gatherer, who has the duty also of seeing that this rule of uniformity is enforced, and the rules generally observed. This cream gathered by one man, is placed in a closed can that totally prevents churning of the cream while in transit, and with appliances that avoid undue heat or cold, avoiding the miscellaneous treatment that milk receives when en route, or the varying circumstances that attend the production of farm butter, the argument is in favor of a creamery butter, made in conformity with the conditions now laid down by our dairy authorities.

A most significant item is the one that arises between drawing the product of a dairy in bulk—milk—and its subsequent product,—cheese—or only taking the cream, one-tenth of the original bulk! Not only is the cost of carriage reduced, but conditions can be controlled and governed. If milk comes to a factory reasonably sweet, it is received, it being impossible to discriminate between two lots of milk, which if tested would show a surprising variation in their butter values, and quite as likely in

U. OF I. URBANA-CHAMPAIGN

that of the cheese element. Milk will vary in its butter product; the difference ma be as great as 3 to 5. By the gathered cream system the man who had the best mil would have the greatest number of inches of cream, and would receive credit for i The butter value of cream may vary, but is small in comparison with two given quan tities of milk. By this system, milk produced by wholesome food, and set in can that are similar, and under conditions that are as near alike as possible, and the crear handled and manufactured by one method, will be inch for inch, practically equal i value.

Unlike the old system, this plan puts an entirely new phase upon dairying, fc there is no massing good and poor material together and then dividing the resu without distinction. It is a plan that gives a man a dividend upon what was indivic ually furnished, and it is in this very individualism, though co-operatively treatec that makes this system superior to any yet devised. In the first place, the farmer i credited with the exact performance of his herd, so that instead of a weight of mil which may be good or poor, and in the end all be compelled to share alike in the fina product, cream from which butter is made is the standard, and the result of the on dairy is the criterion for which cream checks are given for an actual cream produc instead of for milk of unknown value, as we have just seen.

The cost of erecting and running a creamery varies as does all other manufac turing industries. The creamery may cost $5,000, and yet no better butter be mad than in another where the cost did not exceed $1,500. As to the expense of the tw systems, it may be stated that at a whole milk factory where both butter and chees are made, the total expenses (not including freights and packages) of manufactur will, for an 800-cow establishment, probably closely approach $7,000, and for a cream ery of an equal unmber of cows, $3,600 would be a fair estimate. Then the farme has the one problem yet left to solve: Whether this skim milk is more profitable t feed than to dispose of in the form of skim cheese, the same feature again coming u —that of carriage—whether the skim cheese can be put into the market at less ex pense than it can in the condensed form of pork and young stock!

From an Ohio standpoint, we may look at this problem in about this light: Th average amount of produce received from the Western Reserve cow may be calculate at not far from $45 per annum. Some dairies do far better than this, and so the would be ahead by the cream system. If this represents a milk product of 475 gal lons, then we can estimate results about as follows: This milk, if set in an Ohio ca (Wilhelm's) would give a cream return of about 225 inches, or as many pounds o butter, worth in New York, upon the average of 33 cents, $73; but we will call th cream worth 20 cents per inch—$45. The average price for cream upon the Wester Reserve, for 1882, was 27¼ cents per inch, or for an average dairy, over $60 for th cream alone. But possibly our farmer has fed $10 worth of meal to each cow, and fo the sake of making concessions we will call the cream receipts $50 per cow, and t this must be added the feeding value of the skim milk, $16 to $20 more.

Facts show that when our Ohio dairyman has his cows put to the cream test, h as soon as possible, sells the poor ones, gives the others a paying ration of corn an oatmeal, gets a yet higher average of cream. Then he has hit upon a plan of makin a longer season. Instead of drying off his cows, or rather, having the milk flow sto in November owing to unsuitable food, he doubles his feed of grain, which, we hope he has raised, and thus secured at first cost; battens his stable to add to its warmth provides water at the yard, and thus adds two months of profit to the season. Thi gives the cow two months rest before "coming in" the next season. All this ha raised his income, and instead of 450 or 475 gallons of milk, the yield has been force up to 600 or 650, and with it, a great increase in profits.

How have the results been this summer with the selling milk system, and the price received by those who sold cream?

I think I have about as good a little dairy of grade Shorthorns as any one, as m milk weights testify at the factory. The prices I have received this season, for al new milk, are 10, 9, 8, 9, 11, 13, 15 and 17 cents per ten pounds, the variations being fo different months.

My neighbor, who has no better dairy nor better feed, has for his cream receivec for the corresponding months, 20, 22, 25, 27, 30, 33 and 35 cents per inch. My milk ha amounted to about $50 per cow, and his cream has net him $66 per cow, and still lef him the skim milk to feed. As mentioned, the skim milk is still the property of th producer, and by this method of disposing of the cream, the figures would be 22 inches, at 20 cents per inch, $45; feeding value of milk, ten months, $20, total, $65— a sum that not one Ohio dairy in 500 has realized the past season, even with its re markable strong prices for milk and cheese.

"But," says one, "you have not figured up the expense of fitting up with thi 'new A, B, C of dairying.'" No, but the farmer will need a can for every two cows a plank cooling box, worth at the most $10, and if he does not possess cold water, h will need a cheap ice house costing probably $20 more; a total expense of from $40 t $50.

And here I may also remark that to whatever low point in price fine grade creamry butter may reach, dairy butter as a class will be selling at yet lower prices, the vidence of the past being that the lowest grade of creamery butter sells with the best rades of dairy butter, and with the advantage of first preference.

The admirable facilities offered by this system afford a fine chance to practice inter dairying, which is simply making the cows produce when products are highest, nd instead of the winter care of the cows being one of continual expense, turn it into source of profit. If there is no carrying of milk to the factory in the winter. and he cream can be gathered from half a township by two men, winter dairying may se a greater part of its terrors. The cows have to be fed hay in any event, and if y giving each cow eight quarts of corn-cob meal per day, costing ten cents, she will ive one and a half inches of cream worth thirty cents; the profit of the extra labor f milking her certainly pays well.

This idea of winter dairying has, from the very nature of things, yet to become art of the system of dairying. Year by year the taste of the public is becoming culivated in regard to butter as a table luxury, hence the plan of keeping summer butter ver for winter use will each year decrease, and the butter consumers will seek for he fresh made article. This will tend towards two things: a winter-made butter of igh grade to meet a demand that offers a fancy price to stimulate its production, and he other, that it equalizes the year's production more nearly, and therefore tends to greater uniformity of prices.

To make winter butter with the apparatus and methods we now have, will always esult in loss, but by combining the more modern and excellent features of the creamry with a progressive dairying at the farm, these objections are surmounted, and the armer put in a way to realize the extreme quotations of the market.

Another thing is true. Better and a greater variety of food for the stock, better nd warmer barns, more cleanly care of the stock, and improved ventilation, and ater at the stables in abundance, will each have to be provided, but as these are all pon the side of humanity towards our dumb beasts, no objections can be raised, and s healthier stock, increased revenues, and a larger store of fertility is secured for the arm, these should be looked at in the light of investments that yield paying dividends.

Then one improvement will beget another, and the silo may come with its store f green food from November until May to make all these still more successful. If ightly looked at, the farmers in turning attention to grain-raising have already half ccomplished the fact of winter dairying, and the cream-gathering plan has made, long with the city milk trade, the other half possible.

A farmer remarked to me a few days since: "Why do we not imitate the city airyman in one respect and have our cows come into fresh milk at intervals, rather han all come in in the spring, and thus make our dairying continuous?" The answer s: It is not in accordance with the traditions of the Fathers, worthy old gentlemen ll, but hardly abreast of the best modern thought.

The success of this new system in Ohio is to be secured by educated methods. The conditions are reversed: Quantity of milk is to give place to quality of cream— matter that can only be secured by better bred cows, better feeding, and more studied methods.

The idea of breeding for a high grade of milk becomes uppermost in our farmer's mind. Rival breeds and different systems of dairying are made the subjects of inquiry by him, and the claims for excellence or superiority are made a matter of study. nvestigation ensues, and it will soon be found that investigation begets progress and hat in turn inspires education, and the result is that Neighbor A or Neighbor B, as he case may be, is found to be a surprisingly intelligent man with either Jerseys or ome other high-bred cattle, or natives bred up to the requirements of the times, and y precept, example, and practice, the interests of all in that locality are advanced.

In regard to the different systems, or patents, brought forward for cream-gathering,—such as the Wilhelm, Fairlamb, Cherry, Lincoln, "Standard," and I know not ow many others—I have nothing to offer as regards superiority. They are each and ll based upon the one principle of deep setting, the rapid cooling of the milk to make radical separation of milk and cream. To the one objective point they all tend, and f one is better than the others, it is more credit to the skill of the operator than to he machine, for the more study one gives to the matter and seeks to excel in his ocation—that of supplying, first, good milk from which to raise the cream, and then y intelligence, securing this cream—the more satisfactory must always be the esults.

In all intelligent audiences like the one before me, are a number who want to see few figures to prove this thing, for they say, "Why, if every one goes into this reamery business, the thing will be overdone, and the bottom will fall out of the market!" Let us see about this. So far as Elgin is concerned, with all of her wonderful production of butter, the supply of the lard butter manufacturers of Chicago an hardly be met. Iowa and Minnesota cannot keep apace with the legitimate market demand, so we will take Ohio for an illustration. Last year Ohio made about seventy-six million pounds of butter, and of this the creameries and whole milk fa tories furnished probably 10,000,000 pounds, leaving 66,000,000 pounds to be produce at the farm dairies. Now, if on the first day of March next, we should find 660 crean eries built and equipped and with a guaranteed cream supply equal to an average pr duction of 100,000 pounds of butter at each creamery for the year to come, we hav then not substituted farm with creamery butter, for the evidence is that millions c pounds are annually made and consumed, of which no account is made. It will be most remarkable progress if in ten years we shall see anything like this number c creameries in operation, hence we see that no over supply has resulted, and besides, n estimate has been made in regard to the rapidly increasing home demand for goo butter, nor a foreign demand we might supply if we were not already importers ou selves from the limited production of Europe; and all this is evidence that if we eve have a surplus of good butter, no doubt can exist but that a market at paying price can be found for it.

What would this 66,000,000 pounds of dairy butter bring, if made at a creamer and sold in the open market? Assuming that the difference in price between dair and creamery butter is only 12 cents, there is a wide difference in result—one of almos eight million dollars. During a recent tour (in December) through the southern an central part of the state, I found that the difference in price between that paid fc dairy butter at the stores, and the price of creamery butter in Cleveland and Cincir nati, to be 22 cents in favor of the creamery article, but rather than to be accounted "creamery crank," we will put this difference at only 10 cents net between the tw offerings, and we then will find that if we figure the dairy butter at an average of 2 cents for the season, which is above rather than below the actual price, and th creamery butter at 30 cents, which is also below the average, our figures will the show up as follows: 66,000,000 pounds dairy butter at 20 cents, $13,200,000; the sam amount of creamery butter at 30 cents net, $19,800,000, and this for the seventy-fiv counties outside of the Western Reserve. Then finally, Ohio, by turning her whol attention to butter-making, would only produce half enough to cover the suine an oleo trade of this country. In other words, the building of 660 creameries, less tha ten to each county, we would not—let us assume—raise the production, but in qualit we would realize an increase of revenue of not less than six and a half million dollar and have not added a moment to our labor, but have actually decreased it, and fron a labor have changed it rather to a recreation.

Honestly, I believe that the cream-gathering system has not only a place as a pio neer in districts where dairying is to obtain a place among the agricultural industries but even in old and established dairy sections. If 150,000,000 pounds of compound called butter, but which in reality are only tallow or hogs' lard made rich in colo with annottoine, can be sold in preference to low grades of dairy butter, I hold tha 150,000,000 pounds of good butter would take its place, if made—and so well made tha no reasonable criticism could be offered in objection to it. To this end, why are w not more rapidly building creameries, and why are not your long-established chees factories run as butter factories through the winter? Why should not farmers s order their dairies that a certain proportion of the milk product shall be secure to maintain the creameries? Why do we not so calculate that our dairies will pay profit through the year instead of eating up the earnings of the summer in inactivit during the winter, and thus, while making an honest penny for ourselves, suppl labor through the dull season to the factory boys, and thus benefit farmer, consumer and manufacturer, each alike?

This system has more than one feature to commend it to favorable notice an adoption. It implys better cows, an understanding of breeds and breeding; of quan tities and qualities, and of supply and demand, and of markets and their exactions It puts every farm upon a plan of easy stock breeding, for the sending of the butte alone to the market, leaves the great food element of milk—the cheesey matter—a home to be fed to the live stock, which now to the farmer means prosperity as neve before.

Briefly summarized, this system means thrifty progress and prosperity, and al this directed by intelligence, education and calculation. To the farm it means bette and finer breeds of cattle, better butter and better prices. It means supplying th market with less skim cheese and in its place furnishing the markets with choic pork and well-fed veals, such as can be eaten without suspicion.

Beyond all this, it has other features of commendation. It means to the farme less "store pay" and therefore financial independence, for his revenues are in money It says to the tired housewife that there is no milk to skim, pans and cans to wash cream to churn, butter to salt and work over, and the rounds of trouble and worr that come of home butter-making. The time so gained may be spent in cultivatin the refining graces, such as come of reading and sociability, and the beautifying o homes. The education of the family can be better perfected, and the mental facultie developed and brought into requisition in the solving of the great problem of a suc cessful life.

The times portray that dairying is yet to become the industry of a great class who e to conduct it in conformity with the vast improvements made in other fields of r agricultural industry, and in attaining it, will place the fortunate dairyman who eps abreast with the spirit of our universal progress, upon a recognized level with ny class or profession.

Stock raising for the dairy was next discussed. Abijah Powers, of Prairieville, id he had made butter thirty-five or forty years ago in Lee county; used grade horthorns, and believed them to be quite as good, if not better, than other breeds.

At this point Mr. P. Kuleshoff, a delegate from the Russian Agricultural Depart-ent, at Moscow, was introduced, and expressed himself highly gratified at meeting merican farmers, and hoped to learn much of their ways so as to report to his gov-nment.

The question drawer was then opened, and the following question was discussed: Are shade trees on dairy farms objectionable?"

Col. Curtis favored shade in the pasture, and said some dairymen were setting out ade trees in their pastures.

O. S. Cohoon said some of his neighbors did not believe in having trees in the asture.

W. R. Hostetter wanted trees in his pasture.

Major Grout favored shade enough for the cows, but not too much so as to injure e pasture, as it wanted sufficient sunlight and air; his cows frequented the shade, ter crossing a river. Did not believe in trees all over the pasture. He thought at when the cows were done feeding they knew best whether they wanted shade or ot.

C. C. Buell did not believe in letting the animals have their own way. A cow did ot like to leave the shade in hot weather; some find that cattle will do full as well the prairies without shade as with it.

Mr. Scott had lived forty-three years in the vicinity of Sterling, and he believed at cool water running through the pasture was better than shade.

The President said every dairyman should have plenty of fresh running water for s cows; don't change pastures too often; would always have trees.

Mr. Buell did not object to slough water, provided the slough were like his, sandy ottom, and not stagnant.

E. V. Lapham said that cows were naturally lazy; they want good pasture, com-rtable position, and then they will care for themselves.

On motion, adjourned to 1:30

Thursday Afternoon.

The Convention was called to order at 1:30, and the programme taken up.

SILO AND ENSILAGE.

BY JOSIAH GROUT, OF MOLINE, ILL.

The practical significance of the above words will hardly be in the minds of all at st thought. To pass a few utterances upon the subject, calculated to enlarge its mprehension, carry its tidings to new ears, and create new convictions shall be the rpose of this writing. Silo is a pit, vault or place for preserving green fodder; ost advantageous, because as a rule most profitable, green corn fodder. The fod-r, of whatever kind, when preserved, is called ensilage. Thus with elementary defi-tions we pass to practical reflections. The preservation of green fodder is a matter great importance to the farmer, and of late has attracted much attention in stock ising and dairying sections. It is not, as with some seems to be the impression, a w idea, but has been under consideration and test for many years. France germi-ted, developed and submitted the invention, in 1873, concerning which since there ve been criticisms, doubt, hesitation and discussion. The question has been on the ble, under the table, and in various unhappy positions with the incredulous public, til at last I believe it is about to be placed regularly upon the calendar and given e benefit of the previous question.

M. Auguste Goffart, a French farmer of wealth and enterprise, is entitled to the dividual credit of the primary experiences in this business. He commenced in 1853, adually ascending the hill, stimulated by the daylight of slight encouragement and resting in the night of numerous disappointments, until at last he succeeded in mal ing a reputation for himself and a most desirable diet for the stock kingdom. It all so simple that now the wonder is why the world did not know it before he thougl of it. Goffart conceived freshly cropped grass to be the best food for stock, ar sought to preserve any green fodder so that when fed it should have a value appro: imating the choicest food of nature. Curing food by desiccation wastes many of i best properties, and all must agree that, correspondingly, the nearer the cattle ca find food to the condition in which nature leaves it, the better. At first a few easter farmers cautiously ventured the experiment, and now hundreds throughout the cou try are attesting its complete practability, and enjoying its most satisfactory benefit

By the ensilage process the growth of the crop, as it stands in the field, in its juc est state, can be saved without diminution but with important nutritive qualiti added for the stock in winter.

It is hardly credible that a field of corn with its usually stout growth, as you se it silked and tasseled, can be put away and fed from December to April to any kin of stock, more profitably than if fed as freshly cut from the field. That this, howeve can be done easily and inexpensively is the proposition of ensilage.

Formerly the silo was of brick or stone, with cemented waterproof walls and bo tom, being wholly or partially underground. Latterly ensilage has been well pr served in wooden silos and above the ground. The former kind of silo is more or le expensive, according to convenience of construction, and beyond the reach of man The latter kind costs but little, falling easily within the rule that where there is a wi there is a way. The silo, of whatever character, should have smooth walls, allowin the contents to settle uniformly without air chambers. The fodder should be siloe when in full tassel and silk, The modus operandi is to cut up in the field, haul to th silo, there cut into half inch pieces, throw into the pit, tramp thoroughly, when fille cover with cut straw, a following of boards or planks, and weight with stone, grai wood, or anything most convenient, about one hundred pounds to the square foo You can preserve ensilage without cutting by packing whole, but more tramping an pressure are required. Any process by which you substantially exclude the air fro the body to be preserved, practically accomplishes the desired result. About si weeks after closing the silo you can open and commence feeding.

In feeding, expose as little of the remaining portion in the silo as possible. Th food will suffer no harm from opening; before feeding, it should be exposed to the a a few hours. A section of a bay in a barn dropping below the floor is a good place fo a wooden silo. Any wooden structure with thoroughly strengthened walls will an wer. The walls must be strong to withstand lateral pressure. A place 15x15x20 fe will accommodate about ninety tons. Twenty tons of corn fodder to the acre is small yield; from thirty to forty tons ought always to be realized, if not, fertilize fo better results. A ton of good ensilage will keep a cow thirty days, and you can d your own estimating as to what ten acres of fodder will do in the matter of keepin stock. Cattle eat it greedily, and with the best effect. It can be put away for sun mer use, to help out short pastures or to supplement good feed. It is good for th dairy, the team, and all the common stock. It need not cost to exceed one dollar an fifty cents per ton, and two tons are equal to a ton of the best hay. In filling a sil a horse or steam power cutter is necessary, unless you pack the stalks whole. Witl out entering upon a lengthy discussion, with or without reasons to convince of i merits, I desire simply to submit that it is a good thing and can be had by any farm who desires it. I speak from experience, having tried a wooden silo that was in a respects a success.

H. B. Gurler: "What is your experience in feeding ensilage?"

Major Grout: "In one week after I commenced feeding noticed an improved co dition of the cows. I fed in addition, hay and corn, and the flow of milk was perce tibly increased. Had a wooden silo and preferred it to one of masonry; cut some the fodder into inch lengths and some half inch."

Prof. Henry, of Wisconsin, was called for and said that he was experimentin with ensilage at the state farm; has one silo of wood, and found it working well, ar believed that they could be so constructed as to come within the reach of comm farmers; had produced 33,200 pounds of fodder from one acre. In feeding, the cov were tested for two weeks, and the test was satisfactory; they eat from 190 to 2 pounds per day, with one pound of bran, one of corn meal, and one and a half of c meal; cows fed on ensilage require less water than those fed on other feed. Did n consider two tons of ensilage equal to one of hay, but thought that 5,000 pounds of e silage was equal to 2,000 pounds of fodder corn.

Major Grout said he planted his corn for ensilage a little openly, so as to let in th sunlight and air, but not too openly; if too close together it was liable to produ spindling stalks, and they were liable to be blown over by the slight winds.

ROM THE LESSONS OF THE PAST, WHAT IS NECESSARY TO BE DONE IN ORDER TO MAKE THE BUSINESS OF ASSOCIATED DAIRYING PERMANENTLY SUCCESSFUL?

BY GEO. P. LORD, OF ELGIN, ILL.

Mr. President:—The object of this paper is to review, briefly, some of the experences of the past and, from the standpoint of those experiences, to indicate what reains to be done to give stability and permanency to the bussiness of associated airying. It will be admitted by all that the system of associated dairying has had a vonderful development, and yet how few are aware of the struggle by which this as been achieved, especially in the West.

Previous to the introduction of the factory system, the reputation of the dairy roducts, other than "Orange County Butter" and "Hamburg Cheese," was anyhing but enviable. It was claimed by dealers in dairy products that it was impossile to sell any but "Hamburg Cheese" in our Western markets, while as to butter, " you paid your money and you took your choice" of any in the market.

When the factory system was first established in the West dealers in Chicago, vho bought our Western factory cheese, insisted on branding them "Hamburg heese," and selling them as an Eastern product, and for a long time it seemed as hough the business of dairying in the West would be hidden under a cloud, and our roducts be treated only as the products of Eastern dairies.

The contest between manufacturers and dealers was sharp and long continued; he manufacturers claiming that our Western cheese had real merits and should be laced on the market on their merits, while dealers claimed that as they did not bear he imprint of an Eastern product of established reputation, they would buy them nly at a reduced price, while at the same time they were willing to brand them as ' Hamburg Cheese," knowing that their quality was every way equal, if not superior, o that famous brand of cheese.

As a result of that controversy "The Elgin Board of Trade" was established, and lealers were notified that Western dairymen "meant business," and were prepared or any competition in the business of dairying.

Referring to the report of the Department of Agriculture for the year 1871, we ind "that a well-known dairyman, and a manager of a cheese factory in Elgin, Illiois, reports that Western cheese had attained a respectable standing in the market, vhile Western butter had a very unenviable reputation." And here we are reminded hat for a long time after the introduction of the factory system the business was conined mainly to the manufacture of cheese, for in the report of the Department of Agiculture for 1871 the Commissioner says: "No question connected with the dairy is nore vital to producers and consumers than the best management of butter.

"The current expression of dairymen in different sections of the country, both East and West, shows a thorough conviction of the necessity and practicability of a general application of the factory system to the manufacture of butter.

"The application of this system to the manufacture of both butter and cheese gave to our Western dairy products a fame which has been world-wide in its influence on the dairy industry, and placed our Western creamery butter in the front rank both as to its quality and market value, while our Western cheese, though it was slightly 'skimmed,' was of a quality that for years it would bring in open market a price within one-half to one per cent. per pound of Eastern-made whole milk cheese.

The improvement in the quality of our dairy products by the introduction of the factory system, was so marked that there came an increased demand for them, not only at home but in foreign markets, and as a result we exported in 1879 141,634,474 pounds of cheese, valued at $12,579,968, as against 7,103,323 pounds, valued at $649,392 in 1859, and 47,296,323 pounds, valued at $8,881,934 in the year 1869; while our exports of butter increased from 2,019,288 pounds, valued at $853,896 in 1870 to 38,248,016 pounds, valued at $5,421,205 in 1879. These are some of the facts and figures connected with the development of the business of associated dairying, and all will admit that it is a history of wonderful achievements.

It is proper to state that the growth of American agriculture as represented by the exports of the products of the soil was so manifest, even as early as the year 1860, as to cause the Commissioner of Agriculture to make his report for that year in poetic strains. He says (in that report): "When the census of 1860 shall be fully published the inexorable logic of its figures will astonish the world, and prove to every intelligent mind that agriculture is the grand element of progress and wealth. American farmers have extended their operations until the whole population of this country is fed upon the milk and honey, and the wine and oil of a fruitful land, and created a surplus—as shown—one hundred per cent. greater than the increase in population." In view of these facts, so inspiring, well may Bryant exclaim:

"O! country, marvel of the earth,
O, realm to sudden greatness grown."

If the facts and figures of the exports of our agricultural products in 1860 were so inspiring to our Commissioner of Agriculture, what must have been his feelings in reviewing the figures of our exports of agricultural products in the year 1879?

After we have considered the views of our official agricultural representative as he glanced over the figures of our agricultural exports, we are prepared to consider the effect which those exports produced on the minds of European statesmen. Fortunately, we are not left in doubt on this subject, for our Consul at Basle—Mr. Mason—under date of July 24, 1882, reports, "that the question of 'American trade competition' has occupied the attention, not only of political economists, but of the governing classes of Europe, to an extent that can hardly be conceived."

"Political economists and official staticians," (says Consul Mason), "have lectured before Chambers of Commerce upon the growing danger of American competition and pamphlets bristling with statistics have been published by order of imperial governments and laid before parliamentary assemblies to warn them of the extent of the peril, and to inspire them to adopt protective remedies. Hasty and ill-devised measures, like the English laws regulating the import of cattle and the French and Austrian decrees against American pork, and the German tariff decisions classifying hams as cotton goods, and canned meats as hardware, have been adopted to break the overwhelming force of trans-Atlantic competition. How best to protect the farming interests in Europe from the cheap breadstuffs, the meats, and the abounding fruits of the United States, and still give their working classes cheap and wholesome food are the great economic problems of European statesmanship."

And here it is proper to enquire what has been the effect of the combined efforts of "imperial governments and political economists" and the aristocratic capitalists upon the values of American products that have been exported to Europe? A review of the average export price of American products that were exported during the twenty-five years previous to the short crop of 1881, may throw some light on the subject. In the year 1855 the average price of cheese was 15 6-10 cents per pound; in 1860 the price averaged 10 1-10 cents per pound; in 1865, 22 cents per pound; in 1870 15½ cents per pound; in 1875, 13½ cents per pound; in 1879, (the year that we exported fully one-half of our entire cheese product), the average export price was 8 9-10 cents per pound. And here we should not overlook the fact that this was the price of cheese delivered at the seaports of this country, after having been subjected to the cost and charges of manufacturing, boxing, freighting and all storage and commissions up to the date of sale. Nor does the price of butter make a much better exhibit, though the amount exported in 1879 was less than five per cent. of the amount of butter produced. In the year 1855 the average price of the butter exported was 18 1-10 cents per pound; in 1860, 15 cents per pound; in 1865, 33 8-10 cents per pound; in 1870, 29 3-10 cents per pound; in 1875, 23 7-10 cents per pound; in 1879, 14 2-10 cents per pound.

Nor is the showing in the price of other agricultural products much better. The average price of wheat exported in 1855 was $1.66 per bushel, while that exported in 1879 averaged $1.06 per bushel. The corn exported in 1855 averaged 89 cents per bushel; that exported in 1879 averaged 47 cents per bushel. The bacon and hams exported in 1855 brought 8½ cents per pound, while in 1879 it realized only 7 cents per pound. Salted beef exported in 1855 averaged 8 7-10 cents per pound; in 1879, 6 3-10 cents per pound. The pork exported in 1855 was worth 7 3-10 cents per pound; in 1879, 5 7-10 per pound. Lard exported in 1855 was worth 10 3-10 cents per pound; in 1879, 7 cents per pound. The price of refined petroleum that was exported in 1862 was 26 4-10 cents per gallon, while that exported in 1879 averaged but 10 9-10 cents per gallon. As refined petroleum is almost exclusively an American product, it is interesting to notice the fluctuations in the export price of that article during the seventeen years ending in 1879. The average export price of that article in 1864 was 52 3-10 cents per gallon; in 1865, 74 3-10 cents per gallon; in 1870, 30½ cents per gallon; in 1875, 14 1-10 cents per gallon; in 1879, 10 9-10 cents per gallon. With the combination of tremendous American monopolists, and the still more arbitrary, imperial and aristocratic monopolists of Europe against them, it would seem as though the only way for our oil producers to escape impending ruin is for them to plug up their wells.

With this showing every one may judge for himself whether the fluctions in the export price of American products have been caused by the legitimate workings of the law of supply and demand; or that of a combination of aristocratic capitalists, and imperial governments for the purpose of compelling American farmers to keep their products at home, or, failing in this, of reducing the price of their products until American farmers should receive no more for their labors than the pauper labors of Europe are paid for their toil. I know that we are constantly reminded of the cheap lands of the United States, but of what avail to the American farmer are cheap lands, unless he can market the products of the soil at prices that will fully compensate him for his labor. And here I would state that American farmers are willing to meet any and all fair competition, in all markets of the world; nor are they so unsophisticated as not to be fully aware that "there are tricks in the trade," but the classification of hams that were wrapped in canvas as "cotton goods," and meats that have been put

U. OF I. URBANA-CHAMPAIGN

p in tin cans as "hardware," are tricks which only imperial governments, (acting in
e interests of aristocracy), in their dealings with foreign competitors can play. I
bmit that it is asking too much of our American farmers that, after they have run
e gaunlet of all the domestic bears that throng our home boards of trade they should
e compelled to wrestle, single-handed, with all the aristocratic and imperial tigers
at infest the commercial markets of foreign countries. We are aware of the fact
at the combined attack of the imperial governments and capitalists of Europe, on
e prices of the products of the soil, have depressed their market value until their
wn agriculturalists have been brought to the verge of ruin, and that a very large
umber of the better class of their farmers have emigrated to this country in order to
scape the ruin that is involved in the competition between American farmers and
uropean aristocrats, while the poorer classes, like the Irish peasantry, are groaning
nder evils which the government seem powerless to remove. And here it is proper
enquire: What special interests the American farmers have in furnishing the
boring classes of Europe with cheap food, when they know that an abundant sup-
ly of cheap food will enable the aristocratic classes to extort from their laboring poor
e largest possible amount of work for the least possible amount of wages? Then,
gain, as the export price of the surplus fixes the value of the entire product of the
oil, I suggest—and for the purpose of calling attention to the subject I put this sug-
estion in the form of a statement—that American farmers, rather than submit the
alue of their products to the dictation of imperial and aristocratic governments,
ould afford to contribute a sum which, if judiciously expended, would be sufficient to
ay the expense of transporting such a number of artizans as would be required to
onsume the surplus products of the soil, for those artizens, when paid the American
rice for their labor, could well afford to pay a fair price for their supplies, and then
merican farmers would be freed from the greed of imperial power. If our American
ongress were half as much alive to the interests of their constituents as the imperial
overnments are to the claims of their aristocracy, they would be on the alert to de-
ise measures for building up American industries until the number of American ar-
izans employed would be sufficient to consume the entire product of the soil. As we
annot expect Congress to make any such grand undertaking in the interests of Amer-
an industries, we leave the whole matter of devising means for furnishing their
aboring and fighting classes with cheap food without destroying their own agricul-
ural interests, to be solved by the imperial governments and aristocracy of Europe.
nd here we would remark that our only object in referring to our export trade is to
nforce more clearly what remains to be done to give permancy to our system of asso-
iated dairying. From what has been said I think all will admit that the principal
hing to be done is to manufacture cheese that is adapted to the tastes and wants of
he American people, so that our entire product may be consumed at home. Say
hat we will about cheap lands and improved style of agricultural machinery, we all
now that the dairy industry requires skilled and, therefore, expensive labor, and that
is the height of folly to bring this class of labor in competition with the pauper
abor of Europe, and beside this our annual cheese product is hardly more than three
undred and fifty millions of pounds. Were this entire amount consumed at home it
ould give but seven pounds, or one hundred and twelve ounces, per year, or two
unces per week, to each inhabitant, and this quantity would hardly be sufficient as a
elish, saying nothing about the nutritious value of cheese as an article of food. Then
gain there should be a large increase in the quantity of cheese produced in this
ountry. Consider for a moment that our annual butter product amounts to about
,500,000,000 pounds, and that it requires from twenty-five to thirty pounds of milk,
n an average, to produce a pound of butter, and that if we utilized that skimmed
ilk for making a good, palatable and nourishing cheese; then our cheese product
vould be quadrupled and we should not only have enough for a relish for our own
eople but a liberal quantity for the suffering poor of Europe. We are aware that it
vould require more skill on the part of those engaged in cheese-making than we can
ow command in order to accomplish this object. And this reminds us of another
opic for discussion before this convention, to-wit: What the state of Illinois should
o to promote the dairy industry, where the subject for training our young men for
his purpose will be considered.

Then, again, in order to give permanency to associated dairying great care should
e exercised in the manufacturing, storing and distribution of our butter. While it is
rue that our best creamery butter takes a very high rank, and commands the highest
arket price, still all must admit that there seems to be a want of uniformity, either
n the quality or quantity produced, (of both butter and cheese), and this is manifest-
d in the want of uniformity in the dividends made, and it must be admitted that
vant of uniformity in the dividends begets suspicion and distrust on the part of the
atrons. Then, again, if the business of associated dairying is to become permanent
nd successful it is of the utmost importance that those engaged in it shall be men of
trict integrity, as well as of pecuniary responsibility. The position which the owner
nd operator of a factory that is conducted on the associated dairy system occupies is

hardly different from that of a trustee, and as such he is in duty bound to requi from his patrons a uniform standard quality of milk, and to manufacture and dispos of the products and divide and pay over to each of his patrons their just share of th money received from such sales. Some of our dairy sections have had sad experience in the business of associated dairying from losses by those who, after receiving mil from farmers, have failed to make payment, and in such sections the factory syste has been brought into discredit, and the business of dairying has declined. I see n good reason why there should not be some legal enactments that would protect th business of associated dairying from imposition and fraud in that direction. In banl ing, and insurance, and other public trusts, our law-makers have been vigilant in pr tecting the public against fraud and impositions, why should they not guard the trus committed to the individual by the system of associated dairying, and thus secure it a basis of confidence that would be complete and enduring?

CARE OF CREAMERY, CREAMERY APPARATUS AND CREAMERY MACHINERY.

BY C. C. BUELL, OF ROCK FALLS, ILL.

I shall present only a brief discussion of the subject assigned me for the reaso that I have comparatively little special knowledge or experience relating to it. Th importance of thorough neatness in the creamery, and of efficient care of creame apparatus and power machinery is conceded. The simple question is how to do th necessary things cheaply and effectually.

Most creameries are run by steam power, and the prevailing mistake is to attemp to do this with too small an engine and boiler—boiler especially. The wants of creamery require a pretty continuous though uneven supply of steam. The churnin done, the work of pumping still remains, and the use of steam for water-heating pu poses. The butter maker is usually the engineer also, and it is difficult for him t give that close attention to the boiler which would ordinarily be given it by an enginee in constant attendance. It becomes important, therefore, that the boiler should b large in proportion to the demands to be made upon it. The work can thus be don with a comparatively low head of steam. Cheaper fuel can be used: common co screenings, with the addition of a few cobs or wood shavings, answering very we for the bulk of the fuel. The fire can be banked, and still a sufficient head of stea be retained for light work and for water-heating purposes. It is safe to blow off th steam as often as once a week and to scrape the interior of the boiler to remove scale and sediment. To prevent foaming when the boiler is refilled it seems a good plan t rinse the boiler when empty and before refilling. An elevated tank, from which t draw water for refilling boiler, as well as for other purposes, seems quite indispensib in a creamery. It may be added that the blowing off is more effectual with high tha low pressure, but care must be taken to extinguish fire promptly so that the stea may not come in contact with the overheated surface of the boiler.

Second, as to cleanliness: Here steam works a most important part. It is th grand purifier of dairy apparatus in which cream or milk is used. Transportatio cans must be thoroughly steamed, or they are likely to retain the dishwater smel after doing your best with hot water. Cream vats, after being washed as thoroughl as may be with scalding water, are improved by letting dry steam under them, heatin the tin and thoroughly drying and sweetening them. Steam hose can also be run int the churns and their condition greatly improved. Further, churns should be left s that the air will freely circulate through them. A barrel-shaped churn, or a can should be open and rest on its side. If left in position a quantity of pure, cold wate will greatly tend to preserve its sweetness. For the floor we know of nothing bette than free use of hot water, with free use of coperas and coperas water in corners an crevices, or where buttermilk and other objectionable fluids are likely to enter. Th brush and the rubber mop are the great auxiliaries of steam in this work and th creamery manager should buy good ones with end brush to reach corners and crev ices. The rubber mop, with plenty of water, hot and cold, with good drainage, woul seem to be the essentials for floor cleaning. The butter-worker is, perhaps, the mos awkward and difficult to look after, but plenty of hot water and a free use of the brus will conquer it. It is hardly necessary to say that there is a great difference in worl ers in respect to convenience in cleaning, and that this should constitute an importan factor in selecting for practical use. Creamery flavor in butter, so-called, and som times objected to, we think simply means lack of cleanliness in creamery or creame apparatus. It is hardly necessary to say that the power machinery in a creame falls under the same rules as the same mechanical contrivances elsewhere. A littl lost motion in a pump or an engine will do more harm in a day than ordinary wear i a year. The valuable man in this department is he who looks after the little defec as they appear, and is fruitful in devices for correcting them.

U. OF I. URBANA-CHAMPAIGN

L. M. Potter, of LaFox, Ill., differed from Mr. Buell in relation to blowing off the iler; he could not see any benefit from blowing off at full head of steam. The an which he adopted was to have a cistern which holds 300 or 400 barrels of water; es soft water in preference to hard; with the sediment in the boiler he thought it quired more fuel; with soft water does not have to clean the boiler so often.

Question—Is soft water as good as hard?

Answer—I think soft water better.

IS THE GATHERED CREAM SYSTEM A SUCCESS?

BY H. B. GURLER, OF DE KALB, ILL.

I think we can safely say the gathered cream business is a success. There will some failures, as there are in all other kinds of business. I believe there are localies where most any one with good business ability can succeed. That is, where the rmers are making their own butter and selling in the local market, but where comtition is with a well-conducted whole milk factory, I think success is very uncertain. will give some figures further on, comparing the gathered cream and the whole milk vidends. It is plain to us all that the dairy business is tending toward the factory stem, either whole milk or gathered cream. Many of our local markets cannot get iry butter enough to supply their retail trade.

There are great advantages in the gathered cream system over the dairy system. he goods are uniform in quality and of a much better quality than dairy butter. The ctoryman has a great advantage in selling; he can generally save the commissions, hich are a large item in a factory.

I am satisfied that buying cream by the inch does not do all parties justice. If e milk is not well cooled the cream is not all raised, but is worth more per inch than e cream is when the milk is quickly and thoroughly cooled, and all the cream is ised. The patrons soon learn whether they are getting pay for less or more butter an their cream will produce, and those that are getting pay for less than their cream ill produce will certainly be dissatisfied. The gauge, or 113 cubic inch standard, will ve a surplus in hot weather and a shortage in cold weather, caused by more perfect oling in cold weather. A shortage when butter is worth 40 cents per pound is quite serious matter.

I will give some figures comparing our gathered cream dividends, or what the trons received for the cream from 100 pounds of milk, with what our milk patrons ceived. The cans we use for cream-raising are 8¼ inches in diameter, requiring 2⅛ ches in depth of cream to make 113 cubic inches or a pound of butter. It will take ree of these setters or cans to hold 100 pounds of milk. I will now take ten patrons r one week in each month and find the average measurement of cream to a setter, id multiply it by three to find the number of inches of cream to 100 pounds, and ultiply the number of inches produced by 100 pounds of milk, by the average price r inch for the month.

Taking an average of ten patrons for one week for month of May, I find they ised 5 and 79-100 inches from 100 pounds of milk, for which we paid an average of cents per inch, making 58 cents for cream for month of May. Our milk dividend r May was 88 cents per 100 pounds of milk, from which I will deduct 10 cents per 0 pounds for delivering milk to factory, and 15 cents per 100 pounds for difference in lue of skim milk and whey, making 25 cents to be deducted from milk dividend, aving 64 cents to compare with the cream dividend of 58 cents, the milk dividend ing 10 per cent. more than the cream dividend.

In June an average of ten patrons showed 5 and 58-100 inches to 100 pounds milk, r which we paid an average for the month, of 8¾ cents per inch, or 49 cents for the eam from 100 pounds of milk. Our June milk dividend was 83 cents, from which e deduct 25 cents for delivering milk and for difference in value of skim milk and hey, would leave 58 cents to compare with 49 cents from cream, the milk dividend ing 19 per cent. the most.

July showed an average from ten patrons of 5 and 52-100 inches of cream raised om 100 pounds of milk, for which we paid an average of 8½ cents, or 47 cents for the eam from 100 pounds of milk. Our milk dividend for July was 81 cents, from which duct 25 cents to put them on an equality, would leave 56 cents to compare with 47 om cream, the milk dividend being 19 per cent. the most.

In August an average of ten patrons showed 5 and 58-100 inches of cream from 100 unds of milk, at 8¾ cents per inch, would make 49 cents. Our August milk dividend was 102; deduct 25 cents, leaves 77 cents to compare with 49 cents from cream, difference of 28 cents per 100 pounds in favor of whole milk, the whole milk dividend being 57 per cent. the most.

For September an average of ten patrons showed 5 and 85-100 inches of cream om 100 pounds of milk, at 10½ cents per inch makes 61½ cents' worth of cream per 100 pounds of milk. Milk dividend for September, $1.25 per 100 pounds, from which w will deduct 25 cents before making comparison, would leave $1 to compare with 6 cents—a difference of 38½ cents or 62 per cent. in favor of whole milk.

From an average of ten patrons in October I got 6 and 21-100 inches of cream, 12 cents per inch, would make 74½ cents worth of cream from 100 pounds of mil Our October dividend is not made, but will call it $1.40; think it will not be less tha that; deducting 25 cents leaves $1.15 to compare with 74½ cents, a difference of 4 cents in favor of whole milk, the whole milk dividend being 54 per cent. the most.

In November I find the average of cream per 100 pounds of milk to be 6 and 24-1 inches, for which we paid 14 cents per inch, or 87 cents for cream from 100 pounds milk. Our November dividend is not made, but we have settled with some of o patrons at $1.50 per 100 pounds; at that price the difference is 37 cents per 100 poun in favor of whole milk, 25 cents having been deducted from the milk dividend for d livering milk to factory and for loss of skim milk.

I believe the cream-gathering business has come to stay. It is yet new, and t present methods will be improved. It can be made to pay where there are not co enough to sustain a whole milk factory. I have not the least doubt about the bus ness being made successful in many localities where the whole milk business wou prove a failure.

Question—Why did you quit?

Answer—One section is largely engaged in summer dairying, and we found th it would not pay to run over the country after the cream.

Question—What is the value of skim milk?

Answer—When pork is worth 4 cents, skim milk is worth 25 cents per 100.

Question—Which is the more profitable, to take milk to the factory, or sell crea

Answer—I have grade Jerseys and get a large yield of butter, and do not like put such milk in the factory against other which is much poorer.

At this juncture Gov. Cullom appeared in the hall and was received with applaus He was escorted to the platform by the reception committee, and on being introduc to the audience, made a brief speech, which was well received.

The programme was then resumed, the secretary reading Mr. King's paper. [M K. entered the hall while the paper was being read, and answered the many questio which were fired at him.—SECRETARY.]

IS THE CREAM-GATHERING SYSTEM A SUCCESS?

ADDRESS OF T. R. KING, OF MORRISON, ILL.

Mr. Chairman, Ladies and Gentlemen:—You can scarcely imagine my feelings I attempt to make an intelligent representation of this new and peculiar subject a at the same time do justice to all parties. It is very likely that any man who has h the misfortune of being a pioneer in this great undertaking would give a more prej diced view than he who could come in profiting by the experience of those who h gone before; for it is hard to close the eyes upon the thousands of dollars worth patent milk pans and other appurtenances of defunct theories that are stacked up remote corners, not worth one cent. It is hard to forget that all this might be a ba account instead of an incubus. I will endeavor to forget this for the moment, a discuss the matter purely upon its merits. I do not intend to spend all my time eulogizing this great scheme, for my experience from year to year is not such as warrant it. However, it would not be just to discuss the disagreeable features fir as too much good has come out of its progress. When I reflect upon the wonder growth of the dairy interests throughout the West, and the enormous financial bene accruing to the producer, I think let it come, even if it does bring with it a train evils, to overcome which we must depend upon the intelligence and integrity of n only the manufacturers but the well disposed producer.

But four years have elapsed since the creamery interests of Whiteside county ha sprung into active existence, and to-day it is the predominating system of handli the dairy product of the county, as well as of the entire state. And we do not p tend here that Illinois, or Whiteside county even, is the leader in this great crusad but all will admit that we are not far behind. Perhaps nothing can give us a bet idea of the wonderful results of the changes that have taken place, than a review the dairy business for the last ten or twelve years. We might go back much furth than this, but it would present no new feature. I therefore confine my remarks to own range of experience, and, Mr. Chairman, if a worse condition of things exis previous to this time, I would desire to have it veiled and hidden It seems bu thing of yesterday when I bought everything in the shape of butter that was offe

U. OF I. URBANA-CHAMPAIGN

t prices ranging from three to eight cents per pound—it requiring very fine goods to
ring the latter price—the principle part of it being bought at five and seven cents,
nd we considered it well sold if we obtained from nine to eleven cents for it in New
ork or Philadelphia. This was a grade of butter which buyers classed good medium;
elow this was a grade bought at three and four cents, which invariably sold at five
six cents, as you see, at a loss to the purchaser ; and in many sections of Illinois
nd Iowa the per cent. of lower grades was variously estimated at from three-fourths
seven-eighths of all the butter made. It is easy to estimate the loss to the producer
om this condition of things, for these were circumstances that benefited no one.
he hundred weight of milk that produced three pounds of inferior butter could be
ade to produce four pounds of the finest grade, upon which a dealer, after paying a
igh price for it, had a much better margin than he had on the poor grade, and much
ore pleasure and satisfaction in transacting the business. These were evils that
ust, when they exist, sooner or later bring up with a crash, and this proved no ex-
eption. The lowering storm broke forth at last in ominous mutterings of discontent
nd thunders of indignation. Men most interested in the business felt that some-
ing must be done to save the industry from universal ruin, and set to work with en-
rgy of thought and action to find a silver lining to the cloud that overhung them.

The creamery business about this time was presenting itself for public notice.
his was a time ripe for acceptance; in fact, most anything would have been accepted.
came with all its evils—for the system of delivering milk at the creamery has
roved itself defective, especially in this section where large dairies are the exception,
nd far between, rendering it necessary to carry milk too far through the midsummer
eat, it being in many instances four or five hours from the time the milk was taken
om the cow until it was taken in out of harm's way, and it often had to be sent
ome on account of its being sour. I could, if I would, take up your time and worry
our patience by telling you the world of trouble we encountered in this system, the
convenience to the farmer in inclement weather, especially in the spring and au-
mn months ; frozen milk, shortage in sour milk, and a score of other obstacles that
ld us that we were still groping in the dark, with only a gleam of light, but still
ufficient to carry us on another step into the midst of the present or cream-gathering
stem. Coming as it did to alleviate existing troubles, it was received with open
rms and a hearty God-speed, and it certainly does possess advantages that were here-
fore unknown ; and when you ask me to tell you whether the cream system is a suc-
ess or not, I look back upon the many wrongs that have been righted and the many
ooted questions settled, and answer emphatically—yes. But, Mr. Chairman, two
ears' experience has taught me that our Pompeiis and Herculaneums are still too
ear Vesuvius, and many dangers threaten us on every hand. When we took the
ilk direct from the cow to the creamery, the manufacturer was responsible for its
eatment after it left the hands of the producer. But now it remains in his possess-
n from 24 to 36 hours, or until the cream is removed, which is as long as we take any
terest in it. You can readily see how this circumstance may effect the final re-
ilts. There is, to begin with, in the train of evils, dirty milking, indifferent strain-
g, poor and medium milk houses and poor water, although this latter is not a seri-
is difficulty in this country, good water being the rule. There are, however, a great
any who do not take proper care of the milk after it is set even in the right kind of a
lace, for it is let stand at a temperature that soon sours it, and either injures or de-
roys the cream ; and while we are holding up to view the disagreeable features, and
ointing out the defects of the picture, I will endeavor to speak of as many of them as
ossible, with the hope of drawing out suggestions as to remedies. The worst results
ust be expected from any temperature above sixty degrees. But great injustice
ises also from an extremely low temperature, producing a loose, spongy growth of
eam that measures more when it is ten hours old than when it is thirty-six, being
ss dense and containing a larger per cent. of milk—a result obtained from a too lib-
al use of ice, forcing a temperature of forty to forty-five degrees to the detriment of
e mass who only use cold water. This cream should not be removed from the milk
ntil it has reduced itself to a normal condition, thus giving an honest yield.

I do not care to speak at any length of the dishonest methods that we sometimes
ear of being practiced on some creamery men, such as stirring the cream just before
e gatherer arrives on his daily rounds, putting in saleratus or other substances to
eate fermentation, thus producing large measurement. These are irregularities
at I have never had any reason to complain of, as my patrons have never indulged
them to my knowledge, although I hear they have given others no small amount
trouble. I can find no words to express my contempt for these base methods, and
a remedy I would advise leaving them out entirely. If I had such patrons I would
ke especial delight in letting a competitor have them. All these are dangers that
ow threaten our pet scheme, and which call for eternal watchfulness on the part of
e manufacturer, and after he discovers these errors and evils he must exercise a de-
ee of firmness to successfully suppress them that but few really possess. Extreme
ution, a liberal outlay for proper facilities both upon the part of the producer and

manufacturer, is absolutely necessary, and will prove an investment that will retur to us manifold profits.

Let us bear in mind that the producer now demands our most earnest attentio His attention must be called to all those little points so essential in making a fanc article of butter. We must create an interest at the fountain head. He must unde stand that his interests and the manufacturer's are mutual; that if he makes h dairy a success he must do everything in his power to make the business of his manufacturer also a success, that he may not be a financial cripple, but strong, sturdy an vigorous, confident in the power behind him; like a general that leads a loyal an enthusiastic army—sure of success and a stranger to defeat. There should exist certain degree of independence that is equivalent to healthy discipline, which woul force those with eyes, to see, and those with ears, to hear, that all might be benefite thus doing away with the dangers that menace the industry from the present mushroom growth of creameries. Almost every cross-roads has its factory with its impromptu proprietor scouring the country eager for patronage, ready to take anythin in the shape of cream, from which it is as impossible to make fine butter as it woul be to weave silken fabric out of cotton warp. I come more directly in contact wit this feature in Jackson county, Iowa—where I have been buying butter for ten year —as all are aware who have given this matter any attention. Many of the Iow brands of creamery are now selling below fine dairy, and in many sections the farme are going back to the old methods, but taking their education with them, howeve and are making a fine grade, enabling us to pay them splendid prices for their good and instead of being driven from the business I have established another house thi fall, thus showing a possible ebb-tide throughout the entire system. The same conditions are becoming prevalent in this state, and we are not free from the gatherin gloom in this county, although I readily see that to regulate it is beyond the power o any individual. It will sooner or later become self-adjustable. These innumerabl abuses must bring us to grief. The tempest will soon be upon us—the great, surgin billows must have victims, the numerous hosts of inexperienced and systemless operators must go down. Hundreds of dollars' worth of property will constitute the debris and many of our farmers will come out of the fire with burnt fingers. Will it b a loss? No; it will be but the tuition of a well-learned lesson—a lasting impressio from the bitter school of experience. But let me ask our farmers while indulging i the bitterness of their disgust and indignation, not to condemn all for the faults of th few, for remember, you shall have been a party to the crime. You did not repel thei advances, but listened to their importunities, and through a blind hope of persona gain you helped lay the foundation of the confusion—I will not say failure, for ther will be steady hands and wise heads that will stand at the helm, and through th fiercest of the storm, carry their crafts over the wave crests to a safe harbor.

But let me not worry your patience any longer. Let me now tell you how you can when we meet at subsequent conventions, scoff at my arguments, and pronounce me a false prophet. Build good milk houses, have good wells with windmills where springs are not available, keep your cream at a temperature ranging from fifty-eight to sixty two deg., see to it that the milk, when the cream is removed at the end of twenty-four to thirty-six hours, is cold and sweet, and blue as the skies of heaven; use great caution in milking and straining, removing the milk from all filthy localities and offensive smells, secure rich, succulent food for your cows during short pastures in Augus and September, in fact, at all times when your judgment tells you they ought to have it, and for eminent success feed a little grain throughout the entire season. Let your cream go to some manufacturer who makes it his business and study to take proper care of it, demand of him an article of butter commensurate with your own efforts and the grade of material you give him, and ask of him business capacity and professional skill just as you expect it of your merchant, your doctor or your lawyer, rendering it unnecessary for him to cheat you to bring himself gain. Concentrate your forces so that your creamery can at least average 1,000 pounds per day, but do not allow the distance for gathering to be greater than can be brought in every night; appoint three intelligent men of your community to act as your committee to see that your accounts are properly attended to and that careless and imprudent patrons are made to conform to the rules, that the whole system may not derive injury from their carelessness. Let a reasonable price per pound be established for manufacturing, giving the farmers the ups and downs of the market.

I am positively against any standard of measurement. Would advise, therefore, monthly average yields, thus doing away with a great opportunity for fraud. My yield for the season just closed, was as follows: April, one pound butter from 93.1 cubic inches of cream; May, one pound from 93.6; June, one pound from 90.8; July, one pound from 91; August, one pound from 91; September, one pound from 94; October, one pound from 97.8, and November, one pound from 103, at no time taking the standard, or 113 cubic inches—making an average for the eight months of 94.9 cubic inches cream to one pound butter. My prices per pound of butter for the same months in the same factory were: April, 23 and 4-10 cents; May, 19 and 6-10; June, and 6-10; July, 18; August, 20; September, 24; October, 26½; November not ing all sold, cannot determine the price. These prices were net to the producer, the ven cents for manufacturing being deducted. This last season has been no excep- on, so far as good results are concerned, from the two years previous, all being satis- ctory in the extreme. Some may argue that butter has only gone up in sympathy ith other farm products, but this is not a fact. All other products have advanced account of short crops. The receipts of butter have perhaps varied a little from ar to year, but there has been a steady increase in the make ever since the intro- iction of the creamery business, showing beyond dispute that the improvement in e quality has been the cause of the advance in price.

Let the good work go on. There is still too much poor butter made. The day is ming, yea, it is here, when we will have to make every pound of butter that is made the country just as perfect as it can be made. With the history of oleo and suine fore us, we are forced to admit that we have a dangerous competitor, one that will ive us to our trumps, sift out the worthless and establish a survival of the fittest. et us remember that the same indomitable courage and energy is as necessary now maintain our present position as it was when we were establishing this system.

Question—What size can does he use?

Mr. Parker—Mr. King's cream is set in cans as large as the Standard cans.

Mr. King—I use the Hawkeye can. I object to patrons using ice; want the cream oled with ice-water.

Question—What was the average per cow?

Answer—The average was $40 to $50. He suggested using test tubes; let the amster carry them on his route, and in hot weather he can carry a little ice with m; when the driver finds the milk skimmed, let him take a sample to the factory d hold it 70 hours, to get the per cent. of cream,

Gurler did not believe the cream would separate.

King—Let it set about 70 hours, as it requires a long time.

C. F. Dexter said an Iowa man used the test tubes, and deducted from the pat- ns whose cream did not come up to the standard.

CREAM-GATHERING A SUCCESS, AND, IF SO, HOW?

BY D. A. SCHOCH, ORANGEVILLE, ILL.

Cream-gathering is as yet in its infancy. Various methods have been tried, the ost common of which is to furnish the patrons with uniform cans to set their milk , with a glass gauge to measure the cream. The man who collects the cream does e skimming and the recording of the number of gauges received from each patron, ying a uniform price per gauge—calculating that a gauge, one hundred and thirteen ibic inches of cream will, under all circumstances, make one pound of butter; but ir experience has taught us that this is not always the case, but, on the contrary, om Jersey or other good butter-producing cows a gauge of cream will yield, under dinary circumstances, from twenty to twenty-two ounces of butter, while milk from poor butter-producing cow will not yield more than twelve or fourteen ounces of itter under the same circumstances. Again, cream from milk of the same quality, ised under different temperatures, will show equally as great variation. High feed- g will also effect the yield.

This method necessitates driving over the route each day. This is all right in stricts where dairying is made a specialty, and large herds of cows are kept, so that e team returns to the factory in the evening with one hundred and fifty or two hun- 'ed gauges of cream, in the flush of the season, and even in midwinter it will return the factory with perhaps fifty gauges. But in the majority of cases where factories e now being started, corn, beef and pork are the principal products raised, farmers eping four, five, ten or a dozen cows. This being the case, your team will return the factory after a hard day's drive, with scarcely one hundred gauges of cream in e best part of the season, and in winter will return with one-fourth as much, or per- ips hardly enough to pay for going.

Another method is to buy the cream by the gallon, paying no attention to the ethod of setting the milk, whether deep or shallow, in crock or pan, high or low mperature, whether setting twelve, twenty-four, or thirty-six hours; patrons do- g the skimming; taking it for granted that a gallon of cream will make two pounds butter, paying a uniform price per gallon. This is the most unjust method of all, cream thus raised under all manner of setting and skimming, will vary from one three pounds per gallon.

Having had four years' experience in cream-gathering, trying different methods, one of which proved satisfactory to all concerned, we finally adopted the following,

U. OF I. URBANA-CHAMPAIGN

which has proved most satisfactory: Buying all good, clean cream, no differen whether in deep or shallow setting, whether twelve, twenty-four or thirty-six hou setting, patrons doing the skimming. Our cream haulers are provided with a pa twelve and one-fourth inches in diameter, a rule to measure the cream, and a book record the same. They are further provided with a case containing sixteen Masc quart jars, and dipper, for the purpose of bringing samples of cream to the factory be tested. Drivers are instructed to mix the cream thoroughly by pouring from o vessel into another, as it cannot be mixed evenly by stirring; then fill a jar, label, an bring to the factory. This jar holds, when filled, exactly one-half inch of our mea ure. This sample is churned in a miniature churn, and the butter is carefully washe and weighed. The ratio of the butter thus obtained gives the per cent. by which th patrons' cream is rated, until another test is made, which may be the next time h cream is taken, or the next week or next month. A patron never knows when a san ple will be required. Should a patron be inclined to be dishonest, it will very soon b noticed, and as they know not the day nor the hour when the fatal jar may be pr sented for a sample, the driver may very unexpectedly pour the milky cream into h jar. Thus they soon learn that "Honesty is the best policy." By this method w can give each patron what belongs to him, and we get what we pay for (slight vari tions excepted.)

Patrons having good Jersey or other good butter-producing cows, with high fee ing and careful handling of the milk, will have a high per cent. and realize accor ingly. On the other hand, those with poor cows, careless handling and milk dipping will have a low per cent.

By this method we send our teams three times a week over each route in war and twice in cool weather, thus saving one-half the expense in warm and two-third in cool weather, over the self-skimming system.

On motion the convention adjourned to 7:30.

Thursday Evening.

On assembling for the evening session the association was regaled with a song b Prof. Mountz, of Sterling. Mrs. Kate Price Biggers was then introduced, and rea to an attentive and appreciative audience the following pleasing essay:

HOME-BUILDING.

BY MRS. KATE PRICE BIGGERS, OF CARPENTERSVILLE, ILL.

There is an art in home-building, an art that touches more nearly our happiness our well-being, and the quality of our life, than any other.

What hosts of sober thoughts and tender hopes arise as one watches the proces of building a new dwelling.

As I have read and re-read Longfellow's "Building of the Ship," I have ofte wished he had written a companion poem. That his pen had pictured the gatherin of the rocks and stones, tossed about so long by geological vicissitudes and now collected and packed away together in strange companionship, for a rest, in the foundation of the house. The journeying of the timbers from the mighty forests, their hewing and sawing and cutting down to proper proportions to enter into the building; the amount of handcraft expended until the house is finished, from the roof that shal shelter the dear ones, between their coming and going so many years,—to the floors that shall be worn by the mother's faithful feet in her round of daily service, or through nights of patient vigil, and by the toddling steps of babes and dancing feet of childhood, until the walls are completed that we hope may long enclose so much of happy life and peace,—so much of heavy-hearted care it may be; walls that shall echo alike the wailings and cooing prattle of infants, the laughter and blithe songs of youth,— all the various tones in every key that go to make up the music of the family life, whether merry, sad, joyous or solemn, from the hushed whispers of grief to the passionate climax of discords.

If the home endures for a generation or two, how permeated the house becomes with the influences of the home. Ah, true enough, "All houses wherein men have lived and died are haunted houses."

It is a sad misfortune that our American homes are not more stable. That homesteads rich with flavors of dear associations and remembrances of family life, do not endure from generation to generation. The house should be the external part of the home, and there should be a vital connection between the two, as with the snail and its shell.

But a house does not make a home, no matter how liberally and well the stones of earth are builded together for it, nor how strong and handsome the woods from the rest. The cunning architect may devise the most elaborate house from the richest aterials; many skilled artisans labor in it, and yet, however appropriate, we may ve a home no truer than the lair a wild creature retreats to for rest or protection.

Home there is not, without love, without ambition, courage and prudence. Where ve directs such powers as these we may hope for a home wherein the family have ores of good temper, sincerity and industry. Without these elements the home lls short of its perfect use, though the husband be ever so industrious, the wife ever economical. Poverty itself cannot rob a home of its dignity nor even hinder its eing artistic and unique in its adaptation.

Home-building is the art of arts for woman, an art which is to her often an inspi-ation. Many a noble woman turns from comfort or luxury, or personal ambition, ith the divine passion for home-building burning within her, an unselfish flame, lit y love; and with the aid and protection of him she endows with her confidence, will ndertake her mission against the odds of poverty, rigors of climate, or the desolation nd dangers of pioneer life. And such homes as such women can make is nobly ex-mplified by their sons and daughters reared within.

"It is better that great souls should dwell in little houses," 't is said, "than that ase slaves should make dens of spacious mansions." It is perhaps easier to realize a ome in a little house, for the simple life enforced by necessity of labor often displays he richest affections and attributes of character. But there is no place where there better opportunity for all that real art can accomplish in home-building than in imple homes, for this art requires no costly materials, yet it does require the richest ervice of human tact and affections.

There is no place where it is more important to have the home all love and art an make it than in our isolated farm homes. The first necessity is to make the home he grand object, supreme over gain or show, or any but the ambition to build the best ossible home. Let us have a substantial house, no matter how small at first,—some-hing fit to build onto, that there may be no parting from the first dear shelter of the amily, that the history of the family and house and home may be, if possible, contin-ous, and thus be more endeared and the home safer from the unfortunate catastro-hes of frequent partings and breaking up.

Farmers must be stable men to be successful, homes must be stable to be peace-ul and happy, houses must be substantial to be fitting the home and farm. Here where a sturdy race should be reared, let us have solid houses, and no light frames hat roystering children can shake from roof to cellar. Western farm-houses can urely be more appropriaie than many of them are.

I recollect a section in Nebraska where quarries of stone are convenient to every armer's hand, and the earlier houses are entirely or in part built up of this stone, and hough unplastered perhaps, do no shame in the grand rolling country, while the later, more fancy frame houses look ghostly and out of place, as if lost in that breezy, fence-ess, treeless region, and needing to be gathered together and guarded by village ences and shade-trees. I would have a house there built of these native stone slabs, with corners and doors marked by the handsome red and purple bowlders—grand strangers that repose there after their ancient journey from the north. To make the most of the resources of the region, to make the most of the resources of the farm and home,—that is our economy.

We need no expense incurred for the ground until the variety of native shrubs and flowers is exhausted in ornamental planting about the home. True art is expressed in the appreciative use of whatever is at hand. The country home has a fund of material for especial decoration, in easy reach. Children have a capability and mission as home artists, not often developed. If boys who have any such tastes could be afforded tools, room, and a little advice, they could do a great many useful bits of carpentering, and thus have a valuable variety in occupation. Taxidermy is an interesting recreation for many, and certainly can make great additions to the home by way of cases filled with collections of birds, or individual specimens of hawks and owls, and even the heads of cattle and other domestic creatures, tastefully mounted on neat walnut shields and hung on the walls. These a farm boy can prepare with skill after observation and practice, and can make his own cases and shields with little expense.

As for the girls, they had much better spend their leisure in scouring the farm for treasures and adorning the home with simple frames wherein are displayed the delicate beauty of butterflies, or the brilliant varieties of beetles, or the minerals of the region, than in keeping housed up and stooping over trifles of fancy work and covering the walls with frail card-board and other ephemeral constructions that hang limp and askew from inability to serve a proper use. The most healthful and profitable life for girls is compatible with an intimate acquaintance with the biological resources of the farm, with the kitchen and the dairy. No book education ought to interfere with healthy or a womanly education with nature and household industries.

We ought to have more well-informed, independent, healthy young housewives and dairy maids, and fewer delicate school-teachers in our country homes. Health is a grand essential in happy homes, and there ought to be good health on a farm if any where. But some forms of recreation are necessary for health. Not mere amus ment, for recreation is not worth the name unless it counts for something, and it ma always count for something—if the necessity is recognized—by way of improveme and decoration of the home, and in personal culture. It is worth more to every i mate of the home to have some time spent in affectionate improvement of the hom and appreciation of each other's attempts, than the amount of gain in dollars an cents that the time could have brought in some other way.

For culture, there are always books, of course. It seems presumption to sugges reading to busy farmers and housewives who are sorely hurried from dawn to dark and whose day is pieced on by hours ravaged from the rest of night, whose wear heads make but a brief acquaintance with the pillow before they must rise again t direct the ceaseless wheels of industry. Yet I have heard a farmer—a pioneer Nebraska farmer—say that in his opinion, after a farmer was master of his farm he wa better situated to follow the course of the times by reading, and could command mor care free leisure than the man of business. The daughters of this farmer have neve attended school, and yet so well have they used their one luxury of a library that the are better educated than most school-bred girls. They write a hand both legible an pretty, they express themselves in a bright, refined manner, and have the ability t read thoroughly,—a rare accomplishment.

There is the resource of music, also, one of the pleasantest recreations of th home, yet often there is no adequate return for the outlay of time and money for les sons. However innocent the ambition of the young musician, it is soon corrupte by the average teacher, who too often furnishes but superficial instruction—arouse an ambition but to shine before company, and directs the taste no farther than showy meaningless music, and dwells principally on the importance of amazing finger gymnastics. One might venture to suggest that one further mode of securing a genera fitness of things in a home, is thorough care in good dressing—dressing in as good an serviceable materials as can be afforded, and with as few and modest trimmings a allowable. The sewing machine is a greedy thing in many women's lives, eating ou time and nervous strength that should have been used in some more refreshing occupation; and the extra time and material taken to ruffle and shir a cheap dress after fashionable pattern would pay for much better and handsomer material for a simple gown. And if our girls are what they ought to be, to be in keeping with a good farm they will be fair and buxom enough to glorify the simplest cut of gown.

To lessen the time devoted to unnecessary or unprofitable work in the econom of home is to increase the leisure for the main aim of happiness and helpfulness. A considerate speaker at an Ohio farmers' club said: "The greatest waste in th kitchen is in the time and strength of the farmer's wife, for want of conveniences The location of a cupboard may make a difference of miles in her travels for a year The steep and inconvenient cellar stairs in many houses are a source of wasted healt and strength; and much might be saved by having wood and water on a level wit the stove, and close at hand."

We need the best of stuff, and the best arrangements for a good home. Warm well-built houses, appropriate decoration, thorough culture as far as it goes, the bes of music, and especially vocal music. And it is true of music as of some other things the best is not always the noisiest or most surprising, but frequently the simples and most enjoyable. The best of books and periodicals, also, however brief the leisure for them.

Above all, a country home needs the healthiest and best women. Strong-limbed cheerful and industrious women, who can work all day without exhausting thei nerves or the tea-pot. If emulation will do any good, exhibit your daughters at you fairs, good farmers, along with their specimens of cookery and handiwork. Be sur there is something wrong if they do not compare in heartiness and sweetness wit their bread and cakes, or in brightness and good looks with their fancy work. They and their mothers have overworked and suffered for proper comforts and recreations if they do not look as fine as your horses and cattle, or any other of your farm products Live stock presumably does not suffer from nerves and lack of recreation, hence al the more reason of care for those mortal creatures who do.

Society needs more true homes desperately. Homes where health, virtue, and intelligence are the greatest riches. Homes where the most varied interests of industry, culture and recreation center. There *is* no home too small for culture and recreation. Homes wherein rollicking children are transformed into men and women bes fit for life's noblest uses.

Where, then, is a grander calling than that of Home-Building?

The foregoing essay was heartily applauded, the audience seemingly approving every sentiment expressed in it.

Mr. Abe Forrester, of Racine, Wis., was called upon for a song, and upon being

U. OF I. URBANA-CHAMPAIGN

troduced sang one of his character songs as only he can sing it, which brought down e house, and elicited a storm of applause. He responded to the encore with that ver touching song, "That Little German Home Across the Sea."

Dr. Tefft made an earnest appeal to the audience to become members of the asso-iation, stating that it was the membership fee which was received that enabled the ssociation to publish its reports. It had no aid from the State like the Agricultural nd Horticultural Societies, but for the past nine years had footed its own bills, hile others, and especially the State, were benefited by the work it had done and as doing. He then introduced Governor Cullom, who was received with prolonged pplause.

GOV. CULLOM'S SPEECH.

Before beginning his speech proper, the Governor said that in his next annual essage to the next Legislature he would recommend an annual appropriation of 500 for the use of the association so that it could continue its work. This announce-ent was received with great applause. He then spoke as follows:

Mr. President, Ladies and Gentlemen:—In pursuance of my promise a year ago, I m with you to-night: not for the purpose of addressing you on the special subject or your consideration, because you know much more about it than I do, but to talk o you a little while generally, and by my presence to recognize the great interest you epresent, and give those engaged in it a word of encouragement. Holding the rela-ion I do to the state, I regard it a duty (while to me it is a pleasure) to go out among he great producing classes of our people and learn from them the character and ex-ent of their operations. Those engaged in the production of milk, butter and cheese —three staple and wholesome articles of diet, which are sources of great wealth—are ngaged in a business most worthy and honorable. Milk, and butter, and cheese are ach palatable and wholesome, and the Sucker can scarcely do without either. The truggle of mankind, the world over, is to keep from starving—food and raiment are he necessities of life. Men and women must work to secure them—hence the Bible leclaration, "Earn thy bread by the sweat of thy brow." Man cannot get away from his necessity—work or starve—and while I am not fond of hard work, yet I am not lisposed to complain that the necessity for it exists. It is a good thing that we have o work; work is conducive to health, good morals and happiness. Labor is honor-ble while idleness is the parent of crime.

The work of the husbandman is the most important. To secure food neces-ary to life is more important than to secure the luxuries—so it is more important to aise wheat, and corn, and beef, and pork, and to produce milk and butter and cheese, and to manufacture the necessary clothing for the people, than to produce silks and satins, or that the artist should produce a painted landscape.

The dairy business is a branch of agriculture. To be a good dairyman a man ought to be a good farmer—an understaning of one compels an understanding of nearly all phases of the other. To be a good farmer or a good dairyman in these days, a man ought to know something; he ought to be educated. The old idea that any man, however ignorant, could run a farm, does not now prevail. Experience has shown that intelligence is a useful article in successfully tilling the soil and raising crops, as well as in all other business. The old notion that if a young man is educated he ought to study and practice a profession, is also passing away as a mistake.

To be a successful dairyman requires study and work, and if a young man engaged in the business, even if he own an establishment, if he is not thoroughly acquainted with the business, ought to do as a Scotch farmer did when he found that the farmers in Leicestershire were able to raise some product that he could not, he left his farm, went among the people, hired to a farmer as a laborer for six months and returned home to profit by his new experience. If some of our farmers would follow the example of the Scotchman, they would have better farms and make more out of them.

These conventions are grand schools for the education of those engaged in the specialty you represent. Those in attendance not only have a good time, but their stock of knowledge of the best mode of conducting the business in which they are engaged is increased, which enables them to make more money for themselves, and add to the wealth of the country.

There is no country in the world that possesses greater resources essential to the comfort and happiness of a people, than the United States. Our soil produces, under the hand of intelligent labor, a superabundance of a great variety of food. This country can almost feed the world. Our natural resources are almost boundless, not only in an agricultural point of view, but in other directions. We have gold, silver, lead, iron and copper in value of untold millions; cotton may not be said to be king longer in this country, but is a source of great wealth to the producer, manufacturer and the Nation.

Our state has been truly denominated an agricultural state. It is true, agriculture engages the largest number of our people, and is by far the source of our greatest wealth. It is rapidly becoming a manufacturing state as well. The fields and meadows of Illinois are the admiration of all who see them, and by proper care and labor they may be made more beautiful. They will become much more valuable as our towns and cities fill up with people and manufacturing interests. They will become more valuable as agriculture becomes more diversified. We do not fully appreciate the value of a good farm in Illinois. A man with a good wife, a baby or two, and 160 acres of Illinois land, with a snug house on it for a home, is independent and ought to be happy and content. By industry, frugality, and intelligence in the management of such a farm, with ordinary good luck, such a man may become well off. Many do and become money lenders. The farms in the districts in our state where we find creameries and cheese factories in operation, are to-day more valuable and in better condition than in other places. The land is in better condition and the farm buildings more valuable. Such being the case, it is evidence that the dairy business is prosperous and that it is conducted by a thrifty and intelligent class of people, worthy of the prosperity they enjoy. The producers of this state are giving more attention of late years to a variety of crops, I think much to their advantage. A proper system of diversified farming gives profitable employment during the year. The few months of labor required to seed and harvest a good wheat crop, returns a profitable investment for the time occupied, but when the exclusive wheat, corn, or single crop farmer takes into consideration the unemployed time of the men and teams between seed time and harvest, the annual loss to the state in labor may be counted by millions of dollars.

The dairyman has constant employment during the year, and the business should be encouraged and extended, as should all other specialties in agricultural industries which can be made profitable. The partial statistics relating to dairy products in this state, as returned by the assessors for 1881, and published in the reports of the Agricultural Department, are as follows:

During the year there has been—

			Value
Milk sold	40,153,488	gallons	$3,814,58
Cream sold	1,380,938	"	704,27
Butter sold	21,574,414	ponuds	5,897,97
Cheese sold	5,837,974	"	875,69

Making a total in value for milk, butter, cream and cheese, of $11,005,203 sold in 1881 in Illinois.

The value of dairy products consumed on farms where cows are kept, is not included in the above, and it would largely add to the above amount. You who are engaged in the business are doubtless familiar with all these facts, and you do not expect me to include in my remarks all the interesting statistics relating to the rapid growth and extent of the dairy interests in the state and country. Much interesting data may be found in the reports of the Illinois State Dairymen's Association, which are considered of sufficient value to be republished in the annual reports of the Department of Agriculture.

The past year has been a prosperous one for the farmers of this state. With the exception of the fruit and corn crops there is no reason for complaint. The yield and values of the principal crops of the state for 1882, are as follows as nearly as can be ascertained:

Wheat, 52,323,226 bushels	$46,714,37
Oats, 99,275,380 bushels	41,062,61
Rye, 6,538,683 bushels	4,064,48
Hay, 4,389,186 tons	34,006,16

It will be seen by comparison that the wheat crop of this year is the largest one we have ever raised except the crop of 1880, while the oat crop exceeds any former one by 24¼ million bushels. The rye crop of this year is the largest ever raised in the state and worth more money than any previous crop. The hay crop is estimated to be over 345,000 tons more than any previous crop. It is claimed, I think rightly, that the total value of all the crops produced in Illinois in 1882, will largely exceed that of any previous year.

The farmers' interests are closely identified with all the great business interests of the country. One cannot suffer without injury to a greater or less degree to all. We cannot all engage in the same business. Some must raise corn and wheat, and hogs and cattle, and fruits and vegetables. Some must make butter and cheese; some must build cities and railroads, and so it is in the interest of all that every honorable and profitable business shall be fostered and carried on. The world is made up of all sorts of people, with different tastes and capacities suited to all sorts of work, and ence we naturally, as well as from necessity, engage in different pursuits. The more versified the labor the better for the country. No people come to much who all ngage in one or two pursuits. The nation which encourages the greatest diversity f labor, reaches the highest civilization.

Our state is making progress in developing her resources. We are better pre- ared for rapid development than almost any other state, except that we have not as uch home capital as the older states of the east. Our soil is inexhaustible; we are bundantly supplied with coal; we are bounded on almost every side by rivers and kes, and our railroad facilities far exceed those of any other state, according to the port of our Railroad and Warehouse Commission, which has just been laid before e for 1882. We have of main line and branches in Illinois, 8,541 miles of road, be- des double and side tracks, making a total of 10,463 miles. I find in the report a ble giving the number of miles of railroad in nine states respectively, each state aving over 4,000 miles of road. It is as follows :

linois	8,541
ew York	6,279
hio	5,664
ennsylvania	5,590
exas	5,344
wa	5,113
diana	4,765
ichigan	4,284
issouri	4,211

Illinois standing at the head of the list with over two thousand more miles of road han the State of New York, the next highest. By this report I find that the capi- l stock of the roads in this state reporting to the Railroad Commission amounts to 555,689,428, and that the funding debt is $605,812,000. The total gross earnings of rty-seven railroad corporations reporting, amounts to $189,352,977. Of this amount 52,782,000 was for passengers, and $126,767,839 for freight, and about ten millions rom other sources. These roads, of course, most of them, extend beyond the limits f Illinois. The gross earnings from the business in this state is $56,396,000, of which 14,921,000 is for passengers, and $39,985,000 for freight. The total operating ex- enses and taxes paid by these roads in Illinois amounts to $37,628,000, and the gross rofit is $18,767,000. The total number of persons employed this year by these roads s 132,587, who received as wages, $70,775,000; 44,174 of these persons are employed in llinois, and have received as wages, $24,286,000. These facts show only partially the xtent of the railroad system and operations in this state. The vast sums of money nvested in the roads and the great armies of men employed in operating them, also uggest what a power for good they may be for the people. They are a necessity. hey are chiefly relied upon as a means of transportation for the people and what hey produce. They are and should be controlled by the state. They should be used s not to abuse the rights of the people. The power of the state over all corporations as been settled by the decisions of the highest courts. There has never been, since he state attempted to assert its right of control, so perfect obedience to the law by he railroad corporations as there is to-day. It is in the interest of the people and the ailroads that they shall understand one another and help one another. The rail- oads should not be permitted to extort from the people unreasonable sums for their ork, and the people should be willing to allow them fair compensation. The great uestion to the producer and consumer is, how to secure the highest price for the roduct of the one, and for the other to get it for the smallest price after it leaves the and of the producer. It is in the interest of both that the cost of the transportation f the product to market should be as little as possible. The importance of the sub- ect of cheap transportation of freights is directing the attention of the people to the uestion of national control of trunk lines of railroads, and also to the improvement f rivers and the construction of canals. We scarcely realize the extent of the busi- ess done in this country. Take the receipts of grain and other products in Chicago, or instance, during this year. The figures on this subject were kindly furnished me y Mr. Randolph, secretary Board of Trade, and others. They are as follows, viz :

orn, bushels	43,767,649
ats, bushels	24,108,342
ye, bushels	1,846,663
arley, bushels	6,473,386
lour, barrels	3,796,000
heat, bushels	20,630,128

Nearly the same amount of the several kinds of grain received, was shipped from hicago during the same period. During the year 5,000,000 hogs have been slaugh- ered in Chicago. Exclusive of local consumption, there have been packed or shipped t Chicago, between five and six million beeves.

Up to December 2d of this year, there had been received in Chicago 60,759,000 ounds of butter, valued at $12,000,000, and 56,000,000 pounds of it had been shipped ut. Over 50,000,000 pounds of cheese, valued at from five to six million dollars, has

U. OF I. URBANA-CHAMPAIGN

been received during the year. These figures indicate the magnitude of the busines transacted in provisions and agricultural products in Chicago, the greatest market f grain, beef, pork, and nearly everything raised in this conutry—in the world.

I have given you these figures, because I think you and the people generally ar interested in such facts, which indicate the growth and richness of our state an nation.

I will not detain you in the discussion of state affairs, as they relate to the stat government—I shall expect to speak to you in my message to the legislature in a fe days. Sufficient to say that state affairs are in good condition I think, and, as a peo ple, nothing has occurred during the year approaching its close, to mar or disturb th peace and happiness of the great body of the people.

Ladies and gentlemen, I will detain you no longer. I thank you most sincerel for the attention you have given me.

Let us all be governed by wisdom and prudence and perform our duty as citizen and our nation has a glorious future, surpassing in grandeur any nation of the pas and proving, as the generations come and go, the greatest blessing to the world.

During the delivery of his speech, the Governor was frequently applauded, and the close he was greeted with a hearty round of applause.

Mr. A. M. Forrester was again called upon for a song, and regaled the audienc with one of his choicest selections, which was received with delight by those assemble

Prof. Henry, of Wisconsin, made a brief speech, complimenting the associatio on its bright prospects for the future, and the Governor for the promise of aid.

The Association then adjourned to 9 o'clock

FRIDAY MORNING.

On being called to order the question drawer was opened, and the following que tion was discussed: "What is the Cause of Bitter Butter in Winter?"

Mr. Hostetter gave as one reason, in his opinion, that it required longer to sou the cream, and some portion of it may have been over ripe. If the cream was soure as soon as taken from the milk there would be little complaint of bitter butter. H would advise heating the cream to 62 or 64 degrees.

Mr. Gilbert—Watch your cows, feed well, and you will not have bitter butter.

Dr. Tefft said in the olden time bitter butter was complained of because the crea had to be held long. Scalding the cream prevented bitter butter.

The question was further discussed by Messrs. Gilbert, Buell, Broomell, Hoste ter, McWhorter and others, and on suggestion the Secretary called the roll of month to see in which bitter butter predominated, requesting members to answer. The fo lowing shows the result:

January, 1; February, 2; March, 1; April, May and June, none; July, 1; A gust, none; September, 1; October, none: November, 1; December, none.

This did not settle the question that bitter butter was caused by cold; as o delegate reported that he had been troubled with bitter butter in July. However, is quite a well-established fact that old cream will produce bitter butter, wheth churned in midwinter or midsummer, and the cause no doubt lies in the fact that t cream is over-ripe—that is, decomposition has gone so far as to produce taint whic appears in the butter.

Question No. 3, "Deducting the necessary cost of keeping the cow, how muc more does it cost to make a pound of butter in winter than it does in summer," w not discussed.

Question No. 4, "The bulls and the bears—not bovine nor ursine—have they a place in the dairy trade?"

C. C. Buell spoke of the supply and demand, and regretted that there was a inclination to deal in "futures," get up corners, and bull and bear the market; an those who were so engaged were not deserving of the confidence of the dairymen.

Mr. Addy said he did not know of a single Produce Exchange in the land whe the members dealt in futures, especially with butter and cheese.

Secretary McGlincy—All Produce Exchanges have call boards, and it is quite o of the question to deal in futures on a call board without three or more parties fo a collusion with the caller. The desire of consumers now is for fresh butter, and ie wishes to make a deal when he will be the loser; there is more difficulty in the ay in dealing in futures in butter than in grain. No dealer would want to buy June itter for December delivery, nor would a factory man want to sell December butter r June delivery, so it seemed there was little chance for dealing in futures in butter.

The programme was then resumed in regular order.

THE PROCESS OF BUTTER-MAKING—WHAT, IF ANYTHING, IS NECESSARY TO IMPROVE ITS QUALITY?

BY J. H. BROOMELL, OF AURORA.

When we consider the ample attention this subject has received in dairy conventions during the last fifteen years; the number of papers read, the talks had and the peeches made elaborating the entire system of good butter-making, it would seem hat nothing new could be said and that there should not be a single pound of poor utter produced in the entire butter belt of this country.

It is true that reasonable progress has been made, but it has been achieved through practical dose of the old maxim, "Line upon line, and precept upon precept," and I now of no way to improve the quality of our butter product as a whole with our presnt knowledge and appliances, except through the reiteration of the methods and rocesses now used by our most successful butter-makers.

The progress made in all departments of human activity is mainly due to the inestigating turn of mind of a few men. They are not satisfied with what has been ttained. They thirst for new pastures. They look for easier ways of reaching deired ends, and the result is the invention of labor-saving machines. On account of lose competition, they invoke the aid of science to work out better results, and we ave new theories, often in direct contradiction to the long-established notions. I carcely need call the attention of this convention to the fact that the same tendencies hat have been at work overturning things in the great world about us, have been qually busy at work in the department now under discussion.

During the last fifteen years we have seen wonderful things done in the line of pplied science. No period of the world's history has seen anything to compare with t. Edison and Gray put their fertile minds to work, and the results are the electric ight,—devoted to the lighting of buildings, streets and cities,—and the telephone, ow indispensible to the business activity of our country. Considering the fertility n invention of the period of which I speak, it is not strange that the machinery forerly used in butter-making has been supplanted by something much improved, vhile new labor-saving inventions have been added that were not thought of nor lreamed of by our pains-taking, slow plodding ancestors. The gratifying result of all his overturning is a finer article and a better yield of butter per cow; a larger profit o the farmer, which has resulted in his keeping more cows to the square mile, and inally, a steady advance in the price of the manufactured product to the point where he poor, as well as "well-to-do people" are compelled to call it a luxury. The rich lace it in the same catalogue with canvass-back duck, frogs' legs, and quail on toast. Our relations to butter are like those of people who lived two thousand years ago. Chamber's encyclopedia says: "In ancient times the Hebrews seem to have made copious use of butter as food; but the Greeks and Romans used it only as an ointment n their baths and it is probable that the Greeks obtained their knowledge of the substance from the Scythians, Thracians and Phrygians, while the Romans obtained it from Germany. In Southern Europe, at the present time, butter is very sparingly ised, and in Italy, Spain, Portugal, and Southern France, it is sold by apothecaries is a medical agent for external applications." Let us take courage, those of us who have been compelled to pay dearly for our home supply of butter. From the facts of history it must be applied hereafter as an *ointment*, not as a *condiment*, as price and precedent indicate.

Let us note some of the steps taken in the progress of butter-making: It is said to be the practice in Arabia and other Asiatic countries to this day to convert milk into butter by putting the lacteal fluid of the camel and mare into leather sacks and to produce the necessary agitation by tying these sacks behind fleet horses, who gallop with them at full speed over the plains. No attempt is made at cream-raising. The whole milk is put into the sacks and churned by this rude process. Of course the product is crude, and is eaten mostly without salt, but I dare say it will compare well with butter which all of you have seen made by the old dash churn in the hands of an untidy housewife, on the sunny side of her humble shanty on a hot July morning. Such product has been well named "butter." Under circumstances scarcely less favorable, was made a goodly share of the butter of commerce a few years ago. It was the bane of grocerymen and a curse to all dealers who touched it. It was of all shades of color and of all degrees of uncleanness. Some of it over salted, some under salted. Most of it would not stand heat, and a large part of it was absolutely rancid.

U. OF I. URBANA-CHAMPAIGN

Such was the butter made without machinery and suitable appliances, by the "thum process" and unskilled labor. And yet, away back twenty-five or thirty years ag we occasionally met with a woman (men did not make butter then) who, in the fac of all difficulties made good butter—at least it seems so to me. Perhaps I carry wit me to this day the fascination of the keen relish which young people have for an thing they like. However, my mother, who resided in Eastern Pennsylvania, was good butter-maker.

Her butter was sought for by the people of the village who would eat none othe My earliest recollection recalls the stationary barrel churn with dashers inside, whic she used weekly in cold weather and semi-weekly in summer. A thermometer wa not known on the farm until many years later. It would be a curiosity to the modern butter-maker to know how she tempered her cream for churning. She well understood the importance of temperature, and to attain it she used spring water in summer and her kitchen stove in winter. Her sense of touch was so acute that she coul trust her fore finger as a a thermometer the year round. But few can do that. Sh was the first in her neighborhood to introduce artificial color into butter in winter and commanded an extra price on account of it. Her color was the extract of grate carrots. Many years later annottoine came into use. She knew nothing of the modern practice of working out the buttermilk. The butter was gathered while in th buttermilk and worked in a small tube with paddle to extract the buttermilk, an then salted. A second working was had after the salt was dissolved, and then it wa made up into nice, shapely prints ready for the market. Cleanliness was practice first, last, and always. My mother's methods furnish an indication of a pedigree i butter-making which has led on to a family of fine manufacturers around Philadelphi and Baltimore. They have their special customers the year round in those citie who pay a fancy price for a fancy article, often reaching 75 cents per pound. Asid from a specially fine flavor, the scrupulous cleanliness attending the manufacturin and the tasty way of putting it up, in my judgment our best Elgin creameries ar fully equal to these Pennsylvania dairies.

Of devices for setting milk for cream-raising, the number is a legion. We hav the common cylindrical deep setter, with or without a graduated glass in the sid We have the system of submerged setting, and numerous setters claimed to cool mil from the center and outside alike. Some of these have patent automatic arrangements for skimming. Then we have pan setters, some deep, some shallow. We als have the vat setting, cooling from water around the bottom and sides, and by wate pumped through tubing which ramifies the milk. Each of these systems has its adv cates and some probably have merit, but the truth is that no field of labor or industr has been more completely bamboozled with worthless patents than that of butte making. This is especially true of appliances for cream-raising. Many of them ar constructed without reference to scientific principles, are sold at an enormous price and are practically worthless. After all that has been said and done, Simplicity sit upon the throne of successful butter-making, and there is no plan of milk setting fo cream-raising, superior to the plain eight or eight and a half inch deep setter, kep clean inside and out, set in a pool of clear, cold water, in a cool, well-ventilated room and free from all bad odors. During a period of from twenty-four to forty-eigh hours, the cream will rise to perfection and can be taken off skilfully and rapidly wit a cone skimmer in the hands of an expert workman. Then follows the dumping o the skimmed milk into the vats for cheese making, while the cream is put into tanks vats or setters, where it is properly tempered and held through the ripening process This usually requires twenty-four hours at a temperature of 60 deg. in summer, autumn, and spring, and 65 deg. in the cold weather of winter. Under no circumstance should the temperature of the cream be allowed to go above 70 deg.

It is the easiest thing imaginable to spoil a churning of butter by over-heatin the cream during the ripening process. No subsequent good treatment can mend th mischief. Though the cream be churned and the butter washed in very cold water the butter will still lack firmness, and will soften down upon very slight exposure t a warm temperature. This is a fact not fully appreciated by those who attempt t make good butter. The cream should be thoroughly stirred several times during th ripening period. It facilitates the even development of acid, prevents the formatio of a ropy scum on the top, and oxidizes the cream by bringing the globules in frequen contact with the atmosphere, which is now believed to have much to do in producin the fine flavor of butter so much sought after by the trade experts and critical consumers. But let me say right here that all rosy flavor in butter, from whatever sourc obtained, will be most effectually killed if the cream is set, during the ripening process, where there is bad odor from any cause. Not only this, but if the odor is ver marked, the butter resulting from such cream will taste and smell decidedly like th odor which has been absorbed by the cream. To illustrate the point: During last Jul a manufacturer in DeKalb county sold seventy-five tubs of butter on the Elgin Boar of Trade, subject to inspection before it left the creamery. Most of this was gathere cream butter. The buyer visited the creamery the next day, and after going throug st of the tubs, concluded that he could not use it, on account of its bad flavor and te. The manufacturer was surprised at the revelation, for his butter had been ing along in the trade without objection. Setting himself to work to ferret out the se of the difficulty, he found the water stagnant and stinking in the tank where the am sets contained the ripening cream. The butter-maker had carelessly neglected change the water in this tank, until it had become foul. The butter tasted and elled just like this water smelled. The cause being removed, the butter regained former reputation.

I should lay down as a rule that the cream is fit for churning when it attains a asant acid taste without reaching bitterness, and inclines to being thick without ing lobbered. I should give the proper churning temperature at from 55 to 58 deg. summer, and 60 to 62 deg. in winter, the lower figures being necessary to compente for the tendency to a rapid rise from agitation in warm weather, while but little ange may take place with cold surroundings. This assumes that the maximum nperature of the cream during the churning process should not go above 62 deg. to oduce good, solid butter. A degree or two above this might not do irreparable misief, but a departure in that direction is always in the direction of harm.

The question is often asked by visitors entering a creamery, "How long does it ke you to churn?" supposing that the great churn in sight is indicative that the rk should be done in short meter as all improved machinery is supposed to shorten e old ways. They are surprised to hear that our time of churning is from 30 to 60 nutes, depending upon the temperature at which we start, and that we really take re time upon the average than was required by the old dash churn. Early skilled tter makers know that a variation of two or three degrees in the cream will shorten lengthen the churning process by a half, and deteriorate or improve the quality of e butter in a corresponding degree.

Manufacturers must recognize that the taste of butter consumers has become ucated to the point of requiring a nearly uniform color throughout the year, and if e food of the cows does not furnish it the deficiency must be met by the introduction some foreign coloring matter into the cream during the churning process. Of late ars we have been favored with many new preparations for coloring. I have tried t few of them, being rather old fogyish about adopting the nostrums offered by the ddlers and solicitors who travel through the country. I said to a man recently who as very anxious to have me try a bottle of his famous coloring, "I don't want to ther with it. I don't feel the need of it. What I am using gives satisfaction to yself and to the consumers, then why should I invest in your stuff?"

This coloring that I am using is the old reliable annottoine, and there is nothing tter for a butter and cheese color, being easily prepared and as harmless as salt.

The stereotyped rule among good butter makers is to stop the churning when the obules of butter have acquired the size of medium-sized shot, which state is easily tained in the common box churn. I have had but little experience with any kind a *dash* churn, but I am of the opinion that the butter, in its formative state, does t so readily take the globule shape as in the box churn.

Under no circumstances must the churning be continued until the butter has thered into a compact, adhesive mass. With this state of things it is quite imposble to wash out the buttermilk, and with the best treatment that you can bring bear upon such a batch of butter it will be milky during the whole process of orking and a second or third-rate article when it is packed for market. With the ot formation spoken of the buttermilk can be almost entirely removed, and being llowed by three or four washings with clean cold water or until the rinsing water ns off approximately clear, we have a style of butter that will prove satisfactory rough its entire subsequent treatment. We have arrived at the point of removing e globules from the churn to the butter-worker, and having received sufficient orking to obliterate the globules the salt may be added, say three-quarters to one nce of good salt to the pound of butter, and this being quite thoroughly incorpoted with the butter, it is ready to set away until the time of its second working.

This can be done, as convenient, after the salt has dissolved, say in from 12 to hours. The chief object of a second working is to remove the mottled appearance at will always show itself after the first working, and should be continued to the oint of obtaining a clear, uniform color, but not a step further. It is a matter of ice judgment to know just when to stop. Butter is frequently spoilt right here by eing over-worked and made salvy and the grain destroyed.

Mr. Robert Hall, butter inspector in Ohio, says: "When butter is properly urned, both as to time and temperature, it becomes firm with but very little workg, and it is tenacious; but its most desirable state is waxy, when it is easily molded to any shape, and may be drawn out a considerable length without breaking. It is en styled gilt-edged."

It is the practice in some creameries to work their butter pretty thoroughly once incorporate into it the salt and to omit the second working. They claim that they n produce a firm article of butter which satisfies the trade and can gain something by selling brine for butter. I am bold to take issue with them upon both points. is a fraud upon the purchaser to sell him a pound of salt for the price of a pound butter. There will be a serious loss of weight somewhere between the manufactur and consumer which must be either borne by the dealer or charged back to the man facturer. This causes dissatisfaction which, in the end, will more than overbalan all temporary gain which the creamery man may seem to make.

Butter that has had a second working is not porous and briny, it weighs heavy the cubic inch, hence imposes but little shrinkage upon those who handle it. I a positive in the assertion that really fine, even-colored butter cannot be made witho the several workings. Those who have ventured on other ground, and claim succe have not had their butter placed under the keen inspection of a competitive te None of it, to my knowledge, has ever taken a first premium at any of our great dai fairs. Not until the public taste shall be so educated and modified as to readily acce mottled and porous butter as of a high standard of excellence, will it be safe for ma ufacturers to fall into the way of omitting the second working of butter.

Of packages and packing I might say a brief word.

The sixty-pound white ash tub is now the accepted standard package of the ge eral trade. For some southern markets, at certain times of the year, under spec arrangements, the oak firkin is used.

This plan of filling and finishing the tubs I find to give general satisfaction: So the tubs in strong brine for one day before using them. Take the butter from t worker and pack it in solid with a stamper until the tub is nearly or quite level fu Have a hard wood straight-edge twenty inches long, three-eighths of an inch thic and one and a half inches wide. Notch this down one-quarter inch at one end, th placing this notch on the edge of the tub carry it entirely around the tub, keeping t stick at all times over the center of the tub; this will cut the butter down a quar of an inch below the top of the tub leaving it smooth on the top. Lay over the top thickness of dairy cloth, and upon this sprinkle evenly a half pound of salt, whi moisten with water just enough to form a crust of the salt. This makes it keep place when the tub is subsequently handled. Put on the cover and fasten it with fo strips of tin nailed over the top of the cover and down to the second hoop with thre quarter inch clout nails. Now your package is ready for shipping and will comma attention in any market for its neat appearance and evidences of care of details, of which go far towards selling the contents at a good figure.

Patent churns have been run about as successfully in this country as any oth humbug in which the agricultural community was to furnish the intended victin Of the thousand patents issued for churns, practical test has reduced the number use to a very short list. The plain box-churn, the Blanchard churn, the rectangu churn, and the end over end barrel churn, are the standard churns of the day, a they are all simple, which furnishes their strongest recommendation.

I have gone over the ground of modern, practical butter-making, giving su points as may have been suggested by experience and emphasizing those that I kn to be of greatest importance.

Whatever is done to improve our *present* make of butter must be accomplish through a close walk with the very best methods known and practiced by our *pres* generation of butter-makers.

I cannot leave the practical phase of the question without stopping to emphas the grave importance of personal cleanliness among employes in butter factori Tobacco—smoked, chewed or snuffed—should have no place about a creamery. I w not employ a man who uses tobacco beyond the indulgence of smoking when not the premises where butter is made. Every creamery should have over its front do a "prohibitory amendment" reading as follows: "No tobacco using allowed on the premises by employes or others," and this amendment should be enforced.

The *future* of butter-making opens before us a wide field for speculation.

It is still an undetermined question whether cream churned sweet will yield much butter and of as fine quality as sour cream. Some claim that the butter is most excellent quality when fresh, but will not keep. Others that the yield is alwa short from sweet cream.

A writer for the *Ohio Farmer* (July number) answers this question as follow "There is no difference in the butter values of sweet and sour cream; the suppositi that there is arises from the fact that the two treated and churned under similar co ditions will often show a wide difference of results, but when each is treated und conditions suitable to each the butter product shows no variation. The notion th there is such a difference is a mistake, and comes from the fact that sweet crea should be churned at a much lower temperature than that which has been allowed attain a slight acidity, at least ten degrees. The only reason that such a wide diff ence should be observed is that adhesion, which unites the butter globules, requi different temperatures to govern the different conditions of the cream.

"It is now an accepted fact among advanced investigators that the butter g bules are not enveloped in any way, but are at first found in the milk in liquif

UNIV. OF ILL. URBANA-CHAMPAIGN

:m, which sets aside the 'rupturing' theory about uniting the globules, and as sour- ; is only incipient fermentation and the first step toward final decay, the uniting of ; globules has been interfered with and more heat is required to attain the object in ɪw, viz., the collected butter.

" Another point has been quite exploded—that which accorded to acidity the duty developing flavor in butter, but the 'centrifugal' has demonstrated that oxygen is ; chief promoter of this fine flavor, and if cream is aired to a certain point before urning this aroma is secured and the flavor comes with the separation of the cream ɔm the milk. Both may be had in perfection within an hour from milking. The obabilities are that this flavor comes from the action of the air, and that allowing ; cream to sour is only another way of attaining this result. This may be seen by e oft repeated advice, that cream, while attaining acidity, should be frequently rred, and while the reason given, that perfect mixing gave fine flavor, the real cause ıs that the cream was brought into more perfect contact with the air and the same sult reached that is so perfectly attained by the centrifugal, when the cream is in sweet state, and which can only come by the perfect exposure to the air which it subjected to as it is discharged over the edge of the rapidly revolving disk of the ilk cylinder."

Here is a statement worthy of our careful attention and investigation, and if it ould prove true that the fine flavor of butter depends largely upon the perfect oxy- :ing of the cream, and that sweet cream will yield as much butter as sour cream, by ing churned at a lower temperature, we may be on the eve of quite a revolution in r methods of butter making. The "centrifugal" will then take the place of our esent arrangements for cream raising, all setters, tanks and vats will be thrown ide, and the cream turned into fresh, fine butter when but a few hours from the ws.

The U. S. Agricultural Report of 1880, gives the claims of the centrifugal process follows :

1. It will do away with the bother and expense of setting milk in pans for cream ising.
2. It will necessitate the use of less capital in the erection of dairy houses and tings.
3. The cream can be separated from the milk as soon as withdrawn from the ws, and the cream churned immediately.
4. It opens up a new business in supplying fresh cream to consumers who will t be slow in discovering its merits.
5. It will admit of the manufacture of sweet skim-milk cheese.
6. A more complete separation of the cream from the milk than can be obtained the ordinary process.
7. It purifies the milk completely by throwing out the slime and all extraneous ıtter.
8. A larger yield of butter.
9. Less waste in handling.

SYSTEMATIC FEEDING IN THE DAIRY.

BY W. A. HENRY, PROFESSOR OF AGRICULTURE, STATE UNIVERSITY, MADISON.

While to the eye and the taste the number of food articles seems almost infinite, ; careful research of chemistry shows that, after all, we have but three classes of bstances, besides the mineral salts, which make up the plant structure, and after- .rd, upon entering the animal body, form parts of its structure. These three classes ; the albuminoids, the carbohydrates and the fats. We must fix definitely in our nds the origin, characteristics and functions of each of these three classes of food bstances before any real advance can be made in the subject of systematic feeding.

Let us consider first the albuminoids. We know that if we place an egg in proper nditions, a young bird will form within the shell, until in due time it occupies the ɪole interior. With no waste that we can observe, the contents of the egg has be- me flesh, bone, blood, down, etc. The contents of the egg shell, while consisting in ılity of several compounds, after all was mainly albumen. We may take the white egg as the representative of albumen, though we find it in many other food sub- ınces, as in milk, where it exists as the casein. In the plant it is disseminated all :ough the growing parts, and is the most concentrated in the seed. The albumen the various food substances is not always of quite the same composition, so that a ɔader term is often used, namely the *albuminoids*. Chemically the albuminoids are ry complex compounds, in which the four elements, carbon, hydrogen, oxygen and :rogen, are united. Sulphur accompanies the albuminoids, and may be a part of ; compound. Closely allied to the albuminoids we find other nitrogenous com- unds, but it is not within the province of this paper to enter into a description of them. Plants have the power to build up albuminoids from the elements taken fro the soil and air, but it has not yet been found that any animal has this power, that i the albuminoids of the animal structure must come as albuminoids from the vegetabl food eaten by the animal whose system has the power to modify the albuminoids, b not create them. Let us get this fixed clearly in our minds. From the soil in whic there is hydrogen and oxygen in the form of water; nitrogen and sulphur each i combination witn some other element, and from the carbonic acid gas of the atmo phere, the plant has the power of bringing together these four elements, or five, if w include the sulphur, and so uniting them that they form one compound. This t plant can do, but not the animal, which to obtain them must find them alread formed in the vegetable food or in the flesh of some animal.

The carbohydrates form the second great division in our food list. Under thi head comes starch, cellulose or woody fibre, cane sugar, grape sugar, milk sugar, et Their chemical composition is much simpler than that of albuminoids, and they a made up of only three elements, namely, carbon, hydrogen and oxygen. As whe forming the albuminoids the plant has the power to take chemical compounds fro the air and earth, and separating out the elements just named, unite them to form t carbohydrates. The carbohydrates form the bulk of our fodders, as we would natu ally suspect when we reflect that all woody fibre comes under this head, as well a starch and sugar.

The last of the classes, the fats, will receive but little attention here. Certai oils and fatty substances occur in the stems and leaves of plants, but more especiall in the seeds, as in corn, flax seed, etc. These, too, are compounded of the three el ments, carbon, hydrogen and oxygen, as the carbohydrates, but with far less regularit of composition. In a paper like this, where only the main topics receive attentio the facts must be passed over with as little notice as possible. With these two classe as with the albuminoids, the animal appropriating the chemical compounds alread formed by the plant, builds them into its body or breaks them down into simple ones, but it has no power to create them from the simple elements.

Let us turn our attention next to the function or use of these classes of foo The albuminoids are of the highest importance in the animal economy, as they go t form muscle, nerves, tendons—the working machinery of the body. The carboh drates and fats cannot do this, so that albuminoids are essential to the life of animal In addition to the muscles, nerves and tendons of the body, the albuminoids in th body split up, and a part forms fat and a part uric acid, which leaves the body throug the kidneys. In breaking up in this way, heat results. In general, we may call th albuminoids the *muscle formers*, since this is in main their first function. The ca bohydrates cannot make muscle, nor is it certain that from them fat can be formed but by their being burned up, the fat from other sources, which otherwise would b consumed, is saved. The fats taken into the body may form the fatty tissue of th animal; or, like the carbohydrates, may break up into carbonic acid gas and wate The carbohydrates and fats, then, may be styled the "fat formers" and the "fles formers." Of the salts, such as phosphate of lime, sodium chloride or common sal which are as essential as any other food constituent, we need pay no attention in ou early efforts to study the subject. All the ordinary feeding materials contain enoug of these, except common salt, to meet the wants of the animals, and, with this exce tion, we need make no provision for them by special attention.

We must look upon the animal, then, as taking into its stomach a variety of com pounds which may be classed under the heads already named, and that these u changed or but slightly altered enter the circulation, and are built up into the body o are broken down, in which process the phenomena of life appear.

Having learned the functions of the albuminoids, carbohydrates and fats, we wi next see how they are disposed of in our common fodders. Chemical analysis show how many pounds of each of these exist in a given food, as for instance the chemis can tell exactly how many pounds of carbohydrates there are in a ton of wheat stra or how many pounds of albuminoids in a ton of oil meal. The chemist, however, i able to get a larger amount of albuminoids or carbohydrates out of a fodder than th animal can obtain by digestion. Chemistry shows that corn, straw and wood are a mainly composed of carbohydrates, yet we reason at once that an ox would get mo of the carbohydrates out of a given weight of corn than from straw, while from woo fibre only animals of the strongest digestive powers, as the goat, could obtain som slight nourishment. We must distinguish between the total and the digestible co stituents of each of our fodders Let us begin now a study of the table given on pag 72, and see if it does not contain facts of interest. Taking the first fodder in the lis which is "inferior German meadow hay," we see that of 100 pounds, 14.2 pounds a water. To find this a weighed quantity of the hay from the mow is placed in an ove which is heated to a temperature of 212 degrees. After remaining for some time i the oven, it is again weighed, and the difference between the two weights is t amount of water. Upon burning the hay the ash weighs five pounds. In the ne column we find the amount of the albuminoids; then follows the fibre, carbohydrat

OF I. URBANA-CHAMPAIGN

her than fibre, and fat in 100 pounds of the hay. These first six columns give reults obtainable in the laboratory of the chemist. Now follows what the animal can o, as shown by the most careful analysis of the food and excrements of farm aniials. Of the 7.5 poucds of albuminoids which exist in the 100 pounds of hay, we see y the seventh column that only 3.4 pounds are digested, the rest being waste, and assing out of the alimentary canal as solid excrement; 34.9 pounds of the carbohyrates, or somewhat less than half of all, are digested. Of the fat, just one-third or ne-half pound enters the animal system.

To summarize then, of 100 pounds of this inferior hay the animal gets for use 3.4 ounds of albuminoids, 34.9 pounds of carbohydrates, and .5 of fat, besides a small mount of mineral matter. Now for an explanation of a phrase of great importance n this connection. The fat in fodder has been supposed by some to have more value han an equal weight of carbohydrates; and since the function of each is in the main o supply the body with heat, a pound of fat in burning gives off two and one-half imes the heat that a pound of starch does, and the value of fat is placed at two and ne-half times that of starch. If, then, we multiply the amount of fat given by two nd one-half and add it to the carbohydrates, we can get the ratio between flesh formrs and the fat or heat formers. This is the *nutritive ratio.* With the hay under conideration, we have of the digestible nutriment albuminoids, 3.4 pounds. Multiplying he five-tenths pounds of fat by two and one-half, and adding it to 34.9 pounds of carohydrates, gives 36.15 pounds, and dividing the latter by the former gives 10.6, the utritive ratio; that is, for every pound of digestible albuminoids in this hay there re 10.6 pounds of digestible carbohydrates. Dr. Wolff found that in Germany the verage cost of the ordinary food for stock was such that each pound of digestible lbuminoids will cost four and one-third cents, fats the same, and carbohydrates ine-tenths of a cent per pound. With these prices allowed, this quality of hay was orth in Germany, forty-eight cents per hundred pounds. This is shown in the last olumn but one of the table. The last column is more interesting and should be careully consulted by every person who feeds stock. It is a comparative table with avrage meadow hay, which is probably equal to our best hay, as the standard. Calling verage hay worth a cent a pound or one dollar per hundred pounds, we can get at he relative values of other fodders. Thus we find bran worth $1.63 per hundred ounds; not meaning that bran is really worth that, but only on the supposition that verage hay is worth one dollar per hundred pounds. If hay is worth but half that, hen we can afford to pay but half of $1.63 per hundred pounds for bran. It must be emembered that all these results are, with but few exceptions, from German experients, and that the values of the food are those obtained by proper feeding.

which are from the Connecticut Experimental Station. (*Copied from the Connecticut Agricultural Report for 1878.*)

	Water.	Ash	Albuminoids	Fiber.	Other Carbe-hydrates.	Fat.	Digestible Nutriments			Nutritive Ratio.	Value.	
							Allbumin-oids.	Carbohyd-rates inc. fiber.	Fat		Dollars ₩ 100 lbs.	Com pari-son with mea d o w hay. †
Meadow hay, inferior	14.3	5.0	7.5	33.5	38.2	1.5	3.4	34.9	0.5	10.6	0.48	0.74
Meadow hay, better	14.3	5.4	9.2	29.2	39.7	2.0	4.6	36.4	0.6	8.3	0.55	0.86
Meadow hay, average	14.3	6.2	9.7	26.3	41.4	2.5	5.4	41.0	1.0	8.0	0.64	1.00
Meadow hay, very good	15.0	7.0	11.7	21.9	41.6	2.8	7.4	41.7	1.3	6.1	0.74	1.17
Meadow hay, extra	16.0	7.7	13.5	19.3	40.4	3.0	9.2	42.8	1.5	5.1	0.84	1.32
Clover hay, average	16.0	5.3	12.3	26.0	38.2	2.2	7.0	38.1	1.2	5.9	0.69	1.08
Clover hay, best	16.5	7.0	15.3	22.2	35.8	3.2	10.7	37.6	2.1	4.0	0.88	1.39
Timothy hay	14.3	4.5	9.7	22.7	45.8	3.0	5.8	43.4	1.4	8.1	0.69	1.09
Hungarian hay	13.4	5.7	10.8	29.4	38.5	2.2	6.1	41.0	0.9	7.1	0.66	1.04
Rye straw*	14.3	4.1	3.0	44.0	33.3	1.3	0.8	36.5	0.4	46.9	0.35	0.55
Oat straw	14.3	4.0	4.0	39.5	36.2	2.0	1.4	40.1	0.7	29.9	0.44	0.69
Rich pasture grass	78.2	2.2	4.5	4.0	10.1	1.0	3.4	10.9	0.6	3.6	0.27	0.42
Average meadow grass, fresh	70.0	2.1	3.4	10.1	13.4	1.0	1.9	14.2	0.5	8.1	0.22	.36
Green maize, German	85.0	1.0	1.2	4.7	7.6	0.5	0.7	7.4	0.2	11.3	.10	16
Green maize, Mr. Webb, 1874	86.0	0.8	0.8	4.8	7.3	0.3	0.6	8.3	0.2	14.4	.11	.17
Cured maize fodder, Mr. Webb	27.3	4.2	4.4	25.0	37.9	1.3	3.2	43.4	1.0	14.4	57	.91
Potatoes	75.0	0.9	2.1	1.1	20.7	0.2	2.1	21.8	0.2	10.6	.29	.46
Carrots	85.0	0.9	1.4	1.7	10.8	0.2	1.4	12.5	0.2	9.3	.18	.28
Mangolds	88.0	0.8	1.1	0.9	9.1	0.1	1.1	10.0	0.1	9.3	.14	22
Rutabagas	87.0	1.0	1.3	1.1	9.5	0.1	1.3	10.6	0.1	8.3	.15	.24
Turnips	92.0	0.7	1.1	0.8	5.3	0.1	1.1	6.1	0.1	5.8	.11	.16
Sugar beets	81.5	0.7	1.0	1.3	15.4	0.1	1.0	16.7	0.1	17.0	.19	.30
Maize, German	14.4	1.5	10.0	5.3	62.1	6.5	8.4	60.6	4.8	8.6	1.10	1.73
Maize, American	14.4	1.5	10.7	2.0	66.5	4.9	9.0	63.3	3.7	8.0	1.12	1.75
Oats	14.3	2.7	12.0	9.3	55.7	6.0	9.0	43.3	4.7	6.1	.97	1.53
Rye	14.3	1.8	11.0	3.5	67.4	2.0	9.9	65.4	1.6	7.0	1.09	1.68
Barley	14.3	2.2	10.0	7.1	63.9	2.5	8.0	58.9	1.7	7.9	0.95	1.47
Peas	14.3	2.4	22.4	6.4	52.5	2.0	20.2	54.4	1.7	2.9	1.44	2.25
Field beans	14.5	3.1	25.5	9.4	45.9	1.6	23.0	50.2	1.4	2.3	1.51	2.36
Squashes	89.1	1.0	0.6	2.7	6.5	0.1	0.4	7.1	0.1	18.4	.08	.13
Malt sprouts	10.1	7.2	24.3	14.3	42.1	2.1	19.4	45.0	1.7	2.5	1.31	2.06
Wheat bran, coarse	12.9	6.6	15.0	10.1	52.2	3.2	12.6	42.6	2.6	3.9	1.04	1.63
Wheat bran, fine	13.1	5.4	14.0	8.7	55.0	3.8	11.8	44.3	3.0	4.4	1.03	1.62
Middlings	11.5	3.0	13.9	4.8	63.5	3.3	10.8	54.0	2.9	5.7	1.07	1.68
Rye bran	12.5	5.2	14.5	5.7	58.6	4.5	12.2	46.2	3.6	4.5	1.10	1.72
Palm nut cake	10.5	4.2	16.9	17.4	41.0	10.0	16.1	55.4	9.5	4.9	1.61	2.51
Cotton seed cake decorticated	11.2	7.6	38.8	9.2	19.5	13.7	31.0	18.3	12.3	1.6	2.05	3.22
Fish scrap by Goodale's process	11.5	....	64.0	....	....	4.6	57.6	....	4.1	0.2	2.67	4.17
Fis scrap, dry ground	11.7	....	51.5	....	....	8.1	46.4	....	6.2	0.3	2.28	3.56
Dried blood	12.0	4.1	80.8	....	2.6	0.5	54.1	2.6	0.5	....	2.39	3.76
Whey	92.6	0.7	1.0	......	5.1	0.6	1.0	5.1	0.6	6.6	.11	.18
Milk	87.5	0.7	3.2	....	5.0	3.6	3.2	5.0	3.6	4.4	.34	.53

* Nutritive ratios are read 1:10.6, 1:8.3, etc. † Stover, that is corn fodder from which the ripened ears of corn have been removed, has about the same composition and worth as rye straw,

estimating the value of the root crop, no account is taken of the often enhanced lue of the food, owing to its succulence. We know that often human beings crave ch food as apples, grapes, pears, etc., and the value of such cannot be computed om the amount of nourishment they give. The benefit derived from a few feeds of ets or rutabagas to a feverish animal may be of far greater value to it than a large nount of grain, though the latter may contain the most nourishment. Nor can the estion of palatability be here decided. That can only be determined by the farmer ho has both the stock and the feed before him. The values assigned are those for e various food articles, when they are so fed that all the nutritive elements are ex- acted by the animal. Thus the comparative high value assigned to straw is not at which straw has when fed alone, but when it is so fed along with other foods rich albuminoids that all the digestible carbohydrates are extracted by the animal. gain, we must remember that the Germans are more careful with their meadows, d that our hay is inferior to theirs upon the whole, so that their average hay is obably equal to our best hay.

Carefully conducted experiments were instituted to ascertain how much of each the food constituents are required to meet the demands of farm animals under their rious conditions. Let us illustrate by taking the case or a full grown ox weighing st 1,000 pounds and in good flesh and health, and kept in a good, comfortable stall. ow much food is required to keep this animal in just its present condition, neither owing fat nor lean ? At first thought we might conclude that no muscle formers or buminoids are needed, as no apparent work is done, but we should reflect that the imal must breathe. its heart contract many times a minute to send the blood over e body. that the stomach must labor in digestion, and that standing up means mus- lar effort. Our quiet ox, then, is really doing some work all the time, and to keep p these various processes .7 of a pound of digestible albuminoids must be supplied. f the heat formers or carbohydrates, 8 pounds must be supplied, besides .15 pounds fat, any mention of which might be omitted, only that about that amount would obably be found in any of the ordinary foods supplied. Multiplying the .15 pounds fat by 2½ gives .37 as the value of the fat in the food with carbohydrates as the andard ; adding this to 8 pounds gives 8.37 pounds carbohydrates ; now .7 goes into 37 nearly twelve times. and this gives the nutritive ratio 1 to 12. By this we mean at an ox under the above conditions named, requires for his sustenance twelve unds of carbohydrates or fat formers for every one of flesh formers. The nutritive tio for the ox at rest is 7:12. Perusing the tables for rations for farm animals on xt page, we see these statements arranged in tabular form :

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FEEDING STANDARDS.

A. Per Day and 1,000 *pounds, Live Weight.*

		Total organic substance.	Nutritive (digestible) substances. Albuminoids.	Carbohydrates	Fat.	Total nutritive substance.	Nutritive ratio.
		lbs.	*lbs.*	*lbs.*	*lbs.*	*lbs.*	
1. Oxen at rest in a stall		17 5	0.7	8.0	0.15	8.85	1:1
2. Wool sheep, coarser breed		20.0	1.2	10.3	0 20	11.70	1:9
Wool sheep, finer breeds		22.5	1.5	11 4	0 25	13.15	1:8
3. Oxen moderately worked		24.0	1.6	11.3	0.30	13 20	1:7
Oxen heavily worked		26.0	2.4	13.2	0.50	16.10	1:6
4. Horses moderately worked		22 5	1.8	11 2	0.60	13.60	1:6
Horses heavily worked		25.5	2.8	13 4	0.80	17.00	1:5
5. Milch cows		24.0	2.5	12.5	0.40	15.40	1:5
6. Fattening oxen, first period		27.0	2.5	15.0	0.50	18.00	1:6
Fattening oxen, second period		26.0	3.0	14.8	0.70	18 50	1:5
Fattening oxen, third period		25.0	2 7	14 8	0.60	18.10	1:6
7. Fattening sheep, first period		26.0	3 0	15.2	0.50	18 70	1:5
Fattening sheep, second period		25.0	3.5	14 4	0.60	18.50	1:4
8. Fattening swine, first period		36.0	5.0	27.2		32.50	1:5
Fattening swine, second period		31.0	4 0	24.0		28.00	1:6
Fattening swine, third period		23.5	2 7	17.5		20.20	1:6
9. Fattening cattle:	*Av. live wt.*						
Age, mos.	*per head.*						
2— 3	150 ℔s	22.0	4.0	13.8	2.0	19.8	1:4
3— 6	300 ℔s	23 4	3.2	13.5	1 0	17.7	1:5
6—12	500 ℔s	24.0	2.5	13 5	0.6	16.6	1:6
12—18	700 ℔s	24.0	2.0	13.0	0.4	15 4	1:7
18—24	850 ℔s	24.0	1.6	12.0	0.3	13.9	1:8
10. Growing sheep:							
5— 6	56 ℔s	28.0	3.2	15.6	0.8	19.6	1:5
6 - 8	67 ℔s	25.0	2.7	13.3	0.6	16.6	1:5
8—11	75 ℔s	23.0	2.1	11.4	0.5	14.0	1:6
11—15	82 ℔s	22.5	1 7	10 9	0.4	13.0	1:7
15—20	85 ℔s	22.0	1.4	10.4	0.3	12.1	1:8
11. Growing fat pigs:							
2— 3	50 ℔s	42.0	7.5	30.0		27.5	1:4
3— 5	100 ℔s	34.0	5 0	25.0		30 0	1:5
5— 6	125 ℔s	31.5	4.3	23 7		28.0	1:5
6— 8	170 ℔s	27.0	3.4	20.4		23.8	1:6
8—12	250 ℔s	21.	2.5	16.2		18.7	1:6

B. Per Day and per Head.

Age, mos.	*Av. live wg. per head.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*	
Growing cattle:							
2— 3	150 ℔s	3.6	0.6	2.1	0.30	3.00	1:4
3— 6	300 ℔s	7.0	1.0	4.1	0.30	5.40	1:5
6—12	500 ℔s	12.0	1.3	6.8	0.30	8.40	1:6
12—18	700 ℔s	16.8	1.4	9.1	0.28	10.78	1:7
18—24	850 ℔s	20.4	1.4	10.3	0.26	11.96	1:8
Growing sheep:							
5— 6	56 ℔s	1.6	0.18	0.87	0.045	1.095	1:5
6— 8	67 ℔s	1.7	0.17	0.85	0 040	1.060	1:5
8—11	75 ℔s	1.7	0.16	0.85	0.037	1.047	1:6
11—15	82 ℔s	1.8	0.14	0.89	0.032	1.062	1:7
15—20	85 ℔s	1.9	0.12	0.88	0.025	1.047	1:8
Growing fat swine:							
2 3	50 ℔s	2.1	0.38	1.50		1.88	1:4
3— 5	100 ℔s	3.4	0.50	2.50		3.00	1:5
5— 6	125 ℔s	3 9	0.54	2.96		3.50	1:5
6— 8	170 ℔s	4.6	0.58	3.47		4.05	1:6
8—12	250 ℔s	5 2	0 62	4.05		4.67	1:6

In the first column is given the total organic substance, by which is meant th weight of the food as fed, less the weight of the water and ash it contains. By th table we see that the ox weighing 1,000 pounds when well cared for, to keep in th same condition of flesh, neither gaining nor losing, requires 17.5 pounds organic sub stance, .7 pounds albuminoids, 8 carbohydrates, .15 fat, or total nutritive substance o 8.85 pounds per day, with nutritive ratio of 1:12. This is quite a different amoun and proportion from that required by the fattening ox as shown by the same table nsult now the table to ascertain what is required for the cow in full flow of milk, d we see that she requires a large quantity of food and an abundance of albuminoids.

By the aid of the two tables we are prepared to make up ration for our farm imals. Supposing that the farmer has good clover hay, corn fodder and bran, and shes to calculate the feed needed by a cow, in full flow of milk, weighing 1,000 unds, according to the tables. Suppose he concludes to see if twenty pounds of clo- r, five of corn fodder and eight of bran is a fair quantity. Let us calculate by using first table, and see if he is correct. Take the twenty pounds of clover and what ll the cow extract from it? In 100 pounds 16 is water, 5.3 ash. In the twenty unds taken, then, 4.2 is water and ash, leaving 15.8 pounds as dry organic matter. there are 7 pounds of digestible albuminoids in 100 pounds, in 20 pounds there are pounds. If 38.1 pounds of carbohydrates are digested out of 100 pounds, in 20 unds there are 7.6 pounds, and of the fat, by the same reasoning, .24. Calculating the corn fodder and bran, each in the same way, we are enabled to tabulate our sults as follows:

FOOD GIVEN	Dry organic matter	Digestible. Albuminoids	Digestible. Carbohydrates.	Digestible. Fat.
enty pounds average clover hay	15.8	1.40	7.6	.24
ve pounds corn fodder	3.5	.15	2.1	.05
ght pounds bran	6.5	1.00	3.6	.20
	25.8	2.55	13.3	.49
ndard	24.	2 50	12.5	.40

The standard is taken from the second table. We see that the ration is more aple in each particular than the standard requires, yet very near it; in fact, the ror is on the right side of the account. After going over the table and studying w each of the results was obtained, I think any farmer who is willing to put a little udy upon the subject can calculate rations out of such fodders as he has on hand or n profitably purchase with advantage. Here at the west the carbohydrates are very eap in the shape of straw and stover, while corn fodder grows with great luxuri- ice. Albuminoids in the bran and oil meal are cheaper than at the east. I am of e opinion that the material usually fed to our farm animals is too poor in albumi- ids, and that the animal in eating its food, in order to get a sufficiency of this kind, kes into its stomach a much larger amount of carbohydrates than is necessary, hich does not enter the system at all, and passes off in the excrement. With poor elter for our farm stock in our severe climate, no doubt the amount of carbohydrate ven in the table is too small, and allowance should be made on this account. While e rations are usually too poor in albuminoids in winter, they may be too rich in immer. A case brought up at the German experimental station at Mœckern, Sax- ny, is in point. I quote from one of a series of articles on the subject of feeding, by rof. W. O. Atwater, of the Connecticut experimental station, as given in the Amer- an Agriculturist several years since. He says: "The custom of feeding cows on een clover was common about Mœckern. But clover is very rich while straw is ery poor in nitrogen. How would it do to mix the two? Further, the question of *l libitum* foddering (that is, giving the animals all they will eat) was much discussed. me said the cows themselves were the best judges of their wants. Others claimed ey would eat more of such palatable food, as clover, than they would profitably util- e. To test these questions a feeding trial was made with four cows. During one eriod of several weeks they received all the green clover they would eat. During an- her a small ration was given, and a part of the clover was replaced by straw. The dder and milk were carefully weighed and analyzed. Every precaution was taken insure accuracy. The rations in the two periods were as follows: The organic sub- ance contained—

lbuminoids—(I.) 87 ℔s. green clover and 6.7 ℔s. barley straw, pounds	3.8
" (II) 123 ℔s green clov r, pound	5.6
arbohydrates—(I.) 87 ℔s green clover and 6.7 ℔s. bar.ey straw, pounds	17.8
" (II.) 123 ℔s. green clover, pounds	15.

"The result was that the cows gave as much milk, and milk as rich in fat (butter) nd casein with the small ration (I), of which part was straw, as they did with the larger ration (II) of pure clover. The cost of the milk, as based upon the value of th fodder, was just about 50 per cent. more with clover alone, than with the mixture o clover and straw. The 3.8 pounds of albuminoids was sufficient, and in the clover 5.6 pounds, there was a waste. Part of this waste was due to the *ad libitum* feeding but part was due to the unnecessarily large amount of albuminoids in the gree clover."

If there are any who have followed me thus far, let me say to them in closing that I believe, even with our imperfect knowledge upon this subject, we can be benefited by a careful study of what is here set forth. Formerly all expertness in feedin stock died with the fortunate possessor of such knowledge; now we are studying fo the broad underlying principles of this truly worthy calling, which are unchangable and which, when coupled with good judgment will bring forth no uncertain results.

I make no claim to originality in this production, but hope nevertheless tha before many years our University Experimental farm will be so managed that experiments upon Wisconsin farm products will give us more reliable data to work fron than food tables originating in Germany. Much depends upon the position which ou dairymen assume in this matter. If they are satisfied with present knowledge, it wil be but tedious work; while if they are anxious for more light, which seems mos plainly to be the fact, we will enter upon this work with enthusiasm.

To those who wish light upon this subject, I gladly refer to Dr. Henry P. Armsby's "*Manual of Cattle Feeding*," published by John Wiley & Sons, New York. Thi book marks an era in American agriculture, and too much cannot be said in its praise

The tables here used are copied from the report of the Connecticut Experimenta Station for 1878. Too much credit cannot be given to Prof. W. O. Atwater, directo of that station, for the energy he has shown in advancing this branch of scientifi education in America.

Many questions were asked at the close of the address, and among them wer these:

Are there experiments made with timothy hay?

No, sir, it is the average German hay, called meadow hay. These experiment were made in Germany.

Question.—You do not give the most common feed among us—corn meal?

Prof. Henry.—Of 100 pounds of Indian meal a cow will digest 8½ pounds of albuminoids, 60 pounds of carbohydrates and 4 pounds of starch with a ratio of 1 to 8.

The Association then adjourned until 1:30 o'clock P. M.

Afternoon Session.

On being called to order at the afternoon session, the programme was taken up in regular order.

WHAT IS THE STATE OF ILLINOIS DOING TO PROMOTE THE DAIRY INDUSTRY, AND WHAT SHOULD IT DO?

BY GEO. P. LORD, OF ELGIN, ILL.

Mr. President.—If the State of Illinois is doing any special thing for the promotion of the dairy industry of this State, I am not aware of it. What it should do may be outlined by what it is doing for the promotion of knowledge and the development of other industries of the State.

The State of Illinois has established and aids a Normal, and an Agricultural school—one for the qualification of teachers for the public schools, the other for the training of young men in the principles of agriculture and mechanics.

The State of Illinois appropriates money for agricultural and county fairs, and for the exhibition of fat cattle, and in various ways seeks to stimulate the development of our agricultural pursuits and improvement in our live stock.

The money which the State appropriates for these and various other purposes is raised by a tax, and the dairymen of the State pay their full share of the tax thus levied, and as a matter of equity and right the State should afford them a full share of the facilities of acquiring the knowledge that is requisite for the successful prosecution and development of their industry.

Does the Agricultural department of the State require a school for the proper training of young men who are to devote their lives to the business of grain growing, and stock raising?

Does the best interests of the State require a school for the training of young men for the mechanic arts? If so, does not the best interest of the State require that those o are to be engaged in the development of the dairy industry of the State shall be ly qualified for their position ?

Surely no one will claim that the business of grain growing, or stock raising, re- res more profound or scientific knowledge than the business of manipulating milk l manufacturing a high grade of butter and cheese. Nor will any one claim that number of persons who are fully qualified and skilled butter and cheese makers qual to the number of skillful farmers in the State. And surely no one would even gest that all who have invested their capital and devoted their energies to the ry business have ever given the time or attention to the business of butter and ese making that is necessary to qualify them for such an undertaking.

We all know that the business of dairying in this State is new, and that those who engaged in it depend upon others for skill and experience, and that dairying on associated or factory system is the only mode of dairying that is carried on to any ent. Now it may be claimed that only skilled butter makers could produce our t makes of creamery butter, and that therefore there can be no want of skill in this ustry. True, only good butter makers can make a first quality of creamery butter, l yet while a butter maker may produce a high grade of butter it by no means fol- s that such an one obtains all the butter that was contained in the milk, or that he ualified to take the skimmed milk and produce from it a wholesome and palatable icle of cheese.

I am aware that some will claim that it is impossible to make a good cheese from m milk, and yet Prof. Willard relates that when he was in London Prof. Vœlcker wed him a cheese that was rich and nutty in flavor, and withal so mellow that he ld spread it with a knife, and which he supposed was a whole milk cheese, and f. Vœlcker assured him that that cheese was made from milk that had been thor- ghly skimmed.

Now what the dairy industry of this State requires for its full development is n who are qualified to obtain the very best results both in the quantity and quality butter and cheese from the milk entrusted to their care. I have no doubt that value of the milk, or milk product that is spoiled annually for want of knowledge l experience on the part of those engaged in butter and cheese making, is sufficient, ld it be saved, to establish a dairy school and employ teachers who are qualified to e scientific and practical instruction in the art of butter and cheese making. It is duty of the State to educate and train men for this industry, as much as it is the ty of the State to educate and train men for other departments of art or science.

Now the dairy industry of the State requires for its full development a dairy sta- n, where experiments in manufacturing butter and cheese could be carried on and ted until the best modes and methods of treating and manipulating the milk so as obtain the best results in butter and cheese making should be fully and clearly ablished; such experiments should be carried on so as to ascertain the best meth- s of curing cheese, and preserving butter so as to retain its fine aroma, nor should question of feeding dairy cows be ignored, but have a careful test, as also the best de of preserving our forage plants for winter use. And last, though not least, se in charge of such a station should make such experiments with the different eds of cows as to be able to identify and recommend the class that is most suitable dairy purposes.

There should be a dairy school connected with that station, so that our young men o desire to engage in this branch of industry might obtain the scientific and prac- l knowledge that is requisite in order to make them experts in this department; l in order to stimulate our young men to pursue a full course of instruction in that ool the institution should be empowered to issue diplomas to all who graduate wing that they are qualified to act as superintendents of our associated factories. who thus graduated from such a school would find employment ready at hand, l under their skillful management the business of associated dairying would receive ew impetus, and the days of poor butter and poor cheese would be numbered.

For the establishment of such a station the committee appointed by your Asso- tion asked the Legislature of this State to appropriate the sum of $50,000, or about price of a good public school building. Had the Legislature made that appropri- n I have no doubt but that ere this the number of persons that would have become lled in the science of butter and cheese making would have been largely increased, ile the results of the experiments made would have afforded an amount of general l special information that would have greatly aided and advanced the dairy indus- of the State. It would be in order for the Legislature at its coming session to ke the appropriation for a dairy station which was asked for by your committee r years ago.

If it is the purpose of our law-makers to enforce the statute against the adultera- n of food it will be necessary to provide for chemical and scientific tests to detect scientific frauds that are being constantly practiced in our State, otherwise the must remain a dead letter on our statute books.

It would seem to be the part of wisdom for our legislators to enact proper laws for the protection of the patrons of our associated dairy factories against the frau which have been practiced by some of those owning and controling such factorie In not a few instances parties who have conducted factories on the system of assoc ated dairying, after having sold the product of their factories have failed to pay the patrons for the milk which had been entrusted to their care. As our farmers are n expert as commercial men, and are not well versed in the system of judging and di criminating men, there is danger lest this system of fraudulent dealing should l extended.

If our law-makers have deemed it wise to protect the public against frauds : banking and in insurance, they should be wise enough to devise means for protectii the patrons of factories engaged in the business of associated dairying from fraud ar peculation on the part of those having the charge of such factories, otherwise tl whole system of associated dairying is liable to be brought into discredit.

HISTORY OF DAIRYING IN ILLINOIS.

BY I. H. WANZER, OF DARLINGTON, WIS.

What I may have to say at this time will only bear upon the history of dairyir in Illinois as immediately connected with the rise and growth of associated dairyii at Elgin, as there, and there alone, have been my labors and opportunities for obse vation, going back only to those facts which we think led directly to this form (husbandry.

In the winter of 1850, whilst mining in one of the gulches of California, a travel bearing a heavy pack came to our cabin door and, weary from the long march of tl day, asked that he might lay down his blanket and sleep with us that night. He nee not have asked, for he was an old acquaintance—a welcome guest—and none oth than the late P. H. Smith, of Elgin, Ill. He, in company with many of us the pre ious summer, had crossed the plains in search of gold; but he had now made up h mind that he had made a mistake in coming to California, and was on his retui home, expecting to go as far as San Francisco on foot. He shared with us our miner fare that night and when ready to pursue his journey next morning I proposed t carry his pack down the ravine two miles, to a point where I, two weeks before, ha buried our mutual and beloved friend, Dr. Torry, who had died of cholera while upc a professional visit to our camp. As we walked down the narrow and rugged pat Mr. Smith unfolded his future plans to me. He said if spared to reach home l would buy some cows and go to making butter, adding that Mrs. Smith was a goc butter-maker. At this lonely grave we parted, Mr. Smith for his home and I back t the mines. Two years later I too returned home, and, after visiting my father's fan ily, I sought out my friend Smith, who I learned was living on the farm of Dr. Josep Tefft, one mile east of Elgin. As I approached the residence of my friend I met hi coming into the road, driving a yoke of oxen that were attached to an old-fashion ox cart in which was a single can of milk. After exchanging our expressions of jo at meeting he bade me to go to the house and await his return, as he must nee hurry on the oxen to connect with the train that was to take his milk to Chicago. said no, but would rather go with him to Elgin. As we walked beside the oxen l told me that upon his return from California he had bought the cows as he had calc lated and had, until quite recently, made butter. But now, through the influence (Father Brewster, had obtained a contract with the Adams house, of Chicago, to fu nish them with milk; was getting six cents per gallon, which was better than twel cents per pound for butter. I remember his backing the oxen up to the platform (the depot and putting out the can of milk. The depot then was in the rear of wh is known as the B. W. Raymond store. I mention these facts as they carry us bac to the spot where the acorn was planted from which has since grown this mighty oa of associated dairying, whose branches not only overshadow your own state but th of her sister states, Wisconsin, Minnesota, Iowa, Nebraska, Kansas, Indiana an Michigan. As soon as it had been demonstrated by Mr. Smith that it was practi able to ship milk to Chicago by rail others entered the field. The late Luther He rick was the first to send milk to a retailer in Chicago. Jarris Smith, George Ski ner, O. B. Jennie, A. D. Gifford, C. H. Larkin, and Henry Sherman were among tl first to ship milk to Chicago. Soon after our return from California we married in the family of Luther Herrick and took the management of his dairy farm. And rigl here our active work commences as a dairyman in Illinois. About the year 1860 s many had engaged in shipping milk to Chicago that the business was found to l largely overdone and may of us began to look about for other outlets. Some con menced the making of cheese at home, among whom were Frank Webster, upon tl Henry Sherman farm, C. W. Gould, Kin Larkin, P. H. Smith and myself. Our in plements were rude We found a market in Elgin and adjoining towns for ou goods, occasionally taking a load to Chicago loose in wagons, for we had no boxes i which to ship. We remember our first experience in making cheese. We had, ou

U. OF I. URBANA-CHAMPAIGN

me morning in 1860, taken our milk to Elgin, but finding the previous day's milk d been returned with notice that they were so flooded with milk that they could ot use any more of ours for some time to come. We took the previous day's milk to the wagon with that just brought and started for home. Calling at the grocery James Knott, purchasing a large wash-tub, and a little further on to the meat arket of George Roberts and bought a calf's rennet, and upon our arrival home nder the directions of Mother Herrick made our first cheese, putting it to press un- er a temporarily constructed press and to curing in one of the rooms of the house. e soon partitioned off a part of the wood shed and obtained a larger wooden tub, ith a smaller tin tub to go inside of the wooden one, heating our milk and whey by arming water on the stove and turning it between the two tubs. Thus we worked r three seasons, curing our cheese in a part of our house. In 1863 Father Herrick ilt a small cheese factory 16 by 40 feet, and purchased a cheese vat and screw esses from H. A. Rowe, Hudson, Ohio. In this small factory we made the cheese om the milk of our own cows, which had increased from 15 to 40 cows, and as the pply far exceeded the milk demand of Chicago, we commenced to take in milk from r neighbors, after running up our vat full three times a day. We have always car- ed the impression that this little cheese factory 16 by 40 feet was the first west of hicago where milk was received and made up on the dividend plan. Thus we la- ored on releasing the overburdened milk market, taking our cheese loose in wagons incipally to Chicago, in warm weather going all the way by night. We remember reaching South Water street one morning in the summer of '63. Meeting Mike aris, who got upon our wagon, lifting the sheet that kept the dust off our cheese, fering us 21 cents per pound for the load, we closed a bargain at 22 cents, and in ss than one hour had unloaded and received our pay, $462.00, reaching home in time do our milking that night. In 1865, Mr. Hill built and operated a cheese factory at loomingdale. In the same year the Illinois Milk Condensing Company was organ- ed at Elgin and the old Dexter tannery was bought and fitted up for the condensing milk. This for a time relieved the milk market, but only stimulated the produc- on still more, and to create a want for this overproduction the condensing com- any enlarged their works, putting in cheese vats and presses for the manufacture of eese. Mr. Borden came to our place in October, 1865, and bought our milk for one ear at 12 cents per gallon, and hired us for the same term to superintend the manu- cture of their cheese at $80 per month, allowing us time at home night and morning help do our own milking. We took the milk to the factory as we went to work. uring the year we manufactured 240,000 pounds of cheese, most of it going to the ouse of Don Moran & Co., Chicago. In the spring of 1866, Henry Sherman and rank Webster built a small cheese factory two miles west of Elgin, near the resi- ence of J. R. McLean. Also in the same season Ira Albro built one at Wayne; . R. Stone & Co. built one at Richmond, D. E. Wood making their cheese. In the inter of 1866 and 1867, there was a factory built two miles east of Elgin, near the sidence of O. B. Jenne, by M. A. Devine, A. D. Gifford and J. H. Wagner Mr. Gif- rd soon retiring from the firm and P. Moran, of Chicago, taking his place. In the ring of 1867, C. W. Gould built his Home factory. There was also one built at camore by O. K. Waite, also one about this time by Robert and William Stewart, d one by H. W. Mead, of Hebron. The following year many factories were built. mong them we might name factory (B) five miles east of Elgin, another in the same wnship by Gould & Hammond, and one at Udina.

About this time commenced our real struggle for life in the dairy world. Our me markets were supplied and a different article must be made to meet the wants the export trade. Repeated failures had been made by those coming from the rge cheese districts of the east. We began to realize that our water, grasses and imate imparted different qualities to our milk, and a manipulating process must be orked out to meet to meet the peculiarities of our milk and markets. We must cut ose from the East and secure success through our own efforts. The East were vish with their predictions concerning our ultimate failure in the West, and but for e stamina of the pioneers of associated dairying in the West, we might to-day be ruggling on in a half-developed state instead of being the bright and shining star all the world, as we are. How eagerly we caught at ideas that would lead to the raveling of the tangled yarn. How glad to impart one to the other any points ined in the struggle for existence. I never shall forget the hearing of a rap upon y door at midnight in July, 1867. Upon opening I found O. K. Waite, all the way om Sycamore, 22 miles, after making his cheese, to get light and give light. The ee hours of morning found us in serious consultation over this matter of adopting r methods of manufacture to our milk and markets, he driving back to make his eese. I remember at another time Robert Stewart, on his way to Chicago, stopped er a train and walked out two miles to communicate to me some point he had ined in cheese-making. Robert Stewart was always in a hurry to do his brother anufacturer good. / A truly unselfish man. In the winter of 1867 and 1868 the orthwestern Dairymens' Association was organized in Rockford, with Wm. King

President, and R. R. Stone, Secretary. This association has done a great work i dairying in the Northwest. About this time the Elgin Dairy Club was organize with Dr. Joseph Tefft, President. This also done much to remove the stumbli blocks that hedged our pathway to success. In the spring of 1872 the matter of tablishing a creamery in Elgin begun to be discussed, originating with Dr. Tefft. company was organized and Dr. Joseph Tefft sent east to look up the styles of buil ings, etc., in use there. Upon his return a site was selected, and what is known the Elgin Butter Factory was built. Rather late in the season we commenced take in milk. Your humble servant was engaged to superintend the manufacture the butter and skimmed milk cheese. It was here with the help of some of t stockholders' wives that we made the first creamery butter west of the lakes. fair start was made the first season, and the year following there were 80,000 poun of butter made, 60,000 pounds of which went to the government through Richar & Good, of Chicago. In the winter of 1873, the Illinois State Dairymens' Associ tion was organized, with J. R. McLean, President, and D. L. Eldridge, Secreta This association, although organized to promote dairying in the state of Illinois, h done a noble work for the northwest. In 1872 the Elgin Board of Trade was orga ized, and of its wonderful growth and usefulness all readers of dairy literature a familiar. Will simply state that its first year's transactions amounted to $51,0 whilst the transactions of the past year amounts to $2,700 000. Wherever dai goods are handled in the world the Elgin Board of Trade is a household word. overcoming the great obstacles that lay in our path to success in dairying in t west, we had no greater help than the western agricultural press. We rememb with gratitude their efforts to help us on. They early saw that with proper directi this branch of agriculture would become a power in the west. We remember the early visits to our factories. We have in our mind the very first in the person a young man, modest in his bearing, but determined to go to the bottom of ever thing pertaining to dairying in the West. He introduced himself as a representati of the *Western Rural*. He has never since let an opportunity pass unprepared to he on this great work. He has served as secretary of the Northwestern association, a now fills a professor's chair in your agricultural college, at Champaign. We refer Prof. G. E. Morrow. We have another in mind who came to our factory the sa season in search of points upon this great question. He was older than the othe grave in appearance. We took him for the newly-arrived Methodist preacher. H introduced himself as a representative of the *Prairie Farmer*, and as the years ha gone by this man has never lost opportunity to further the dairy interests of t west. We refer to Prof. Rodney Welch. There was still another, younger than t others, who at the early period of this great work found that if he would wisely co duct the dairy department of our local paper, he, too, must post himself. He oft came to our factories for points upon which to write. He buttonholed us upon t streets, asking us all manner of questions about rennets, curds, acids and of thin animate as well as inanimate about cheese. And as the butter question came up a later day, we find him ready to advise, and from the bountiful feed of cheese, butte milk and cream, this boy has developed into a full-grown man. Wherever dairyi is carried on in the known world his name is familiar. We refer to your worthy se retary, Colonel R. P. McGlincy.

All honor to these men and the press they represent. And I hereby tender personal thanks to them for the good works spoken for me in bygone days. There another of whom we would like to speak, not connected with the press, whose na will stand prominent when the history of dairying in Illinois is written up, and whom it can be said that no other man in the state has given more time gratuitous to the advancement of this great work in the west. He was older than the re of us; he could reason scientifically upon the great questions that hedged our pat way to success in associated dairying; he has honored your Board of Trade and co ventions as your president; he presides over the deliberations of this body to-da We refer to Dr. Joseph Tefft. We call to mind with moistened eyes those th fought with us in those early days of dairying that since have crossed the dark riv to their long home, among whom were Robert Stewart, T. K. Wait, J. R. McLe and H. A. Ford. These were men that laughed at impossibilities. In calling the men to mind it awakens a feeling akin to that when I remember my own brothe that fell upon southern battle-fields.

We would like to speak of the moral and financial bearings that a successful e tablishment of this branch of agriculture has had upon the state of Illinois and t West, but will not trespass upon your time. Will only say that it has been our priv lige to live to see this form of dairying increase the price of butter from ten cents p pound to thirty cents per pound, and cheese from six cents per pound to twelve cen per pound. We have seen the farms cleared of mortgages and hovels give place costly dwellings, and sheds to expensive barns; we have seen the children of t dairyman emerge from ignorance to knowledge and respectability. It carries with

U. OF I. URBANA-CHAMPAIGN

refining influence that no other branch of farming does; it acquaints our sons and ughters with the commercial world.

In reviewing our own connection with the great achievements of dairying in the est, we find ourselves in the position of the worn-out ox, but with the privilege of anding by the cart, feeling proud of the fact that when our children read up the ory of dairying in the west they will there find recorded the fact that their father lped to plant, water and prune this mighty dairy oak that stands to-day the proud, iumphant tree, challenging the admiration of the dairy world.

PRACTICAL REFRIGERATION AND THE TRANSPORTATION OF DAIRY PRODUCTS.

BY C. F. DEXTER, OF CHICAGO.

On this subject I am a student of principles rather than a practical experimental-t. Although in connection with my business I have observed somewhat closely the sults of the work of others, and during an extended intercourse with men whose siness requires refrigeration, I have observed a lack of knowledge of the nature of eat and the atmosphere, and their relation to each other and to moisture, which gives se to crude theories and ill-founded experiments. A knowledge of the nature of eat and its relation to the atmosphere, makes the problem of refrigeration, so far as e securing of a cool, dry atmosphere is concerned, as simple as the warming of a om with a fire or the cooling of a pitcher of water with ice.

Heat is not a substance—is not matter in any form, so far as known, and cannot seen, weighed or measured (its *effect* in expanding mercury may be measured).

Years of scientific research have failed to induce it to materialize. The scientist nows nothing of it except its effects. Prof. Tyndall writes a treatise on "Heat as a ode of Motion." To him, the term signifies a vibratory condition of matter. Warm d cool, hot and cold, merely indicate relative degrees of this vibratory condition. Warm" at the Arctic circle may be "cold" at the equator. The force of gravity, erefore, has no effect on heat, nor on its *relative negative*, "cold," any more than it s on light or darkness, and the use of the terms "heat" and "cold" to indicate dis-nct substances, the one lighter, the other heavier than the atmosphere, is unscientific d misleading to the last degree, giving rise to the false theory that "cold" is a heavy bstance, which, when extracted from ice, falls like an apple or a brick.

The atmosphere is a very elastic fluid, sensitive to the slightest change in temper-ure, expanding on a rising and contracting on a falling temperature, to such extent d with such force that caloric engines are operated by utilizing this principle. Air as weight like all other matter, and when a part of a body of air contracts by cool-g, it becomes denser,—more solid,—contains more matter, and is consequently heav-r, bulk for bulk, than the surrounding air. Because of this, and not because it is ld, it has a tendency to *sink* into warmer, lighter air. If a part of the air be warmed expands, becomes lighter than the adjacent air, and therefore rises, by the same w in obedience to which the balloon rises—not because it is heated. A bar of iron eighs the same, whether red-hot or ice-cold. Water expands and becomes lighter on *oling* from 36 to 32 deg.

The air is rarely or never entirely still. In summer there is a current of warm ir rising on the sunny side of your room. In winter the expanded air which rises om your heated stove is replaced by the colder air which *flows* toward the stove from ll points of the compass, and all the air of the room is warmed. A block of ice in e upper part of the room would reverse the currents and cool all the air of the room. t has been argued that a room cannot be cooled unless the ice be placed above the om. As well insist that a room cannot be warmed unless the stove be placed below . The same laws govern the circulation in both cases, reversing the currents.

At the house of a friend of mine there is a back room opening out of the sitting-om, the floor of which is two steps lower than the floor of the sitting-room. The ead of the family balanced a toy balloon by tying a button to it. The balloon rose ith the air rising from the stove, crossed the ceiling and dropped just below the cas-g of the doorway between the rooms, rose to the ceiling of the back room, crossed , then down the farther wall, back across the floor, tumbled up the two steps as if ndowed with an intention, and made its way toward the stove, making the circuit in ve or eight minutes. The rooms were both closed except the doorway between them. ry this easy experiment. You can get more education out of it for the children, to ay nothing of the adults of the family, than you ever bought before for the same oney. If you try it, do not allow the balloon to touch the hot stove. If you do, it ill explode and blow the isinglass out of the stove doors. I know it will do this, be-ause I tried it.

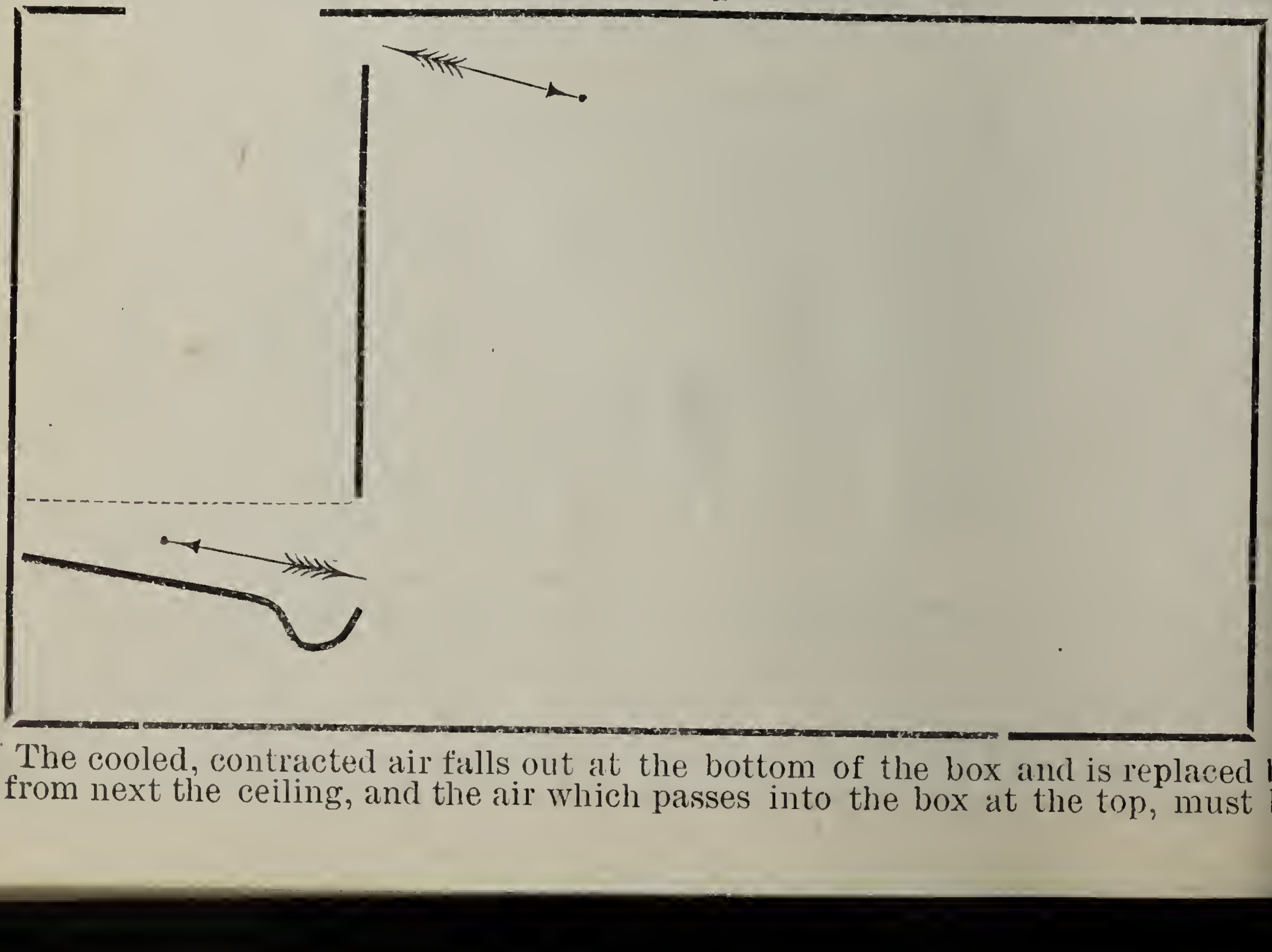
Whenever the uniform density of the air is disturbed by a change in temperature, moves freely and quickly to restore the equilibrium. It is the great natural com-on carrier for the distribution of temperature and moisture, not only over the surface of the earth, but in warming buildings and in cooling refrigerator rooms and ca If it were without the properties described, there would be neither need nor pos bility of refrigeration, for organic life would perish from the earth.

Air, on being warmed, say from 40 to 80 deg., expands and absorbs moisture if has access to water. When cooled by contact with a cold surface, it contracts and posits its moisture, acting like a wet sponge when it is squeezed to a smaller compa It is not the heat of the stove which dries the wet towel; it is the absorption of water by the expanded air. The frost does not come through or out of the stone wa the wall is cold enough to freeze the moisture condensed upon it from the air which cooled by it. With these principles understood we may examine intelligently t practical questions of refrigeration.

Refrigerator warehouses may be divided into two classes, one in which the air the cooling room is cooled by a cold ceiling, which is itself cooled by ice resting on in the room or story above; and another in which the air of the cooling room pass through a body of ice and returns to the room. The former is best adapted to lar rooms having 1,000 or more square feet of floor surface. The cold ceiling must be made as to carry off the water condensed upon it by cooling the air. For small co warehouses, I confess to a prejudice in favor of the method of passing the air throu ice or ducts leading through ice, as this process disposes of the question of moistu When the air of a closed room or car passes through a body of ice, it leaves it at s 33 to 35 deg., having deposited its moisture on the ice, and become dry enough for mo if not all of the purposes for which refrigeration is used. *And no more moisture can got out of it, except by cooling it lower than before or by chemical agencies.* The squeez sponge retains the water which remains in it until it is squeezed a second time, hard than before.

The room which is cooled by a cold current must not have any surfaces, accessib by the air, cold enough to condense moisture from the air of the room. I cannot course enter into details of construction. Builders of cold warehouses have differe models of accomplishing results, while working in harmony with the natural laws outlined herein, with more or less mechanical ingenuity and simplicity of constructio in details.

Every proprietor of a creamery, if he cannot have a cold warehouse, should hav a cooling room, in which he can carry a carload, or at least his product between dat of shipment. For this purpose, construct an ice box in one end of a closed room. e tending from the ceiling of a room to within two or three feet of the floor, cased u tight all around, except an opening four or five inches wide, close up to the ceiling, t let in the air of the room. The bottom of the box should be a strong grating, whic holds up the ice and lets the cold air through freely. Below this grate a tight, slopin dripping board, which carries the ice-water into a gutter which carries it out of th room. The lowest part of the dripping board may be five to ten inches below th grating, to allow free delivery of the cold air. A basement room is preferable, as permits the easy charging of the ice-box through a trap door in the floor above. necessary to charge the ice-box from the cooling room, have a door in the side of th box for that purpose, which can be closed air tight.



The cooled, contracted air falls out at the bottom of the box and is replaced b air from next the ceiling, and the air which passes into the box at the top, must b

U. OF I. URBANA-CHAMPAIGN

laced by the air from the lower part of the room, which has just previously passed ough the ice-box. The cold air which is constantly delivered at the bottom crowds d forces the air which precedes it, to every part of the room and to every package its contents. The intelligent reader hardly needs to be told that the air of the m cannot stop circulating through this ice-box while it contains ice. Since the d air which comes from the ice-box, expands on mixing with the warmer air of the m, it will absorb any moisture which may be in the room, and when this air again ches the ice, this moisture will be squeezed out of it. A well filled ice-box con- ucted on this plan will not only dry the air of the room, but water spilled on the or will be absorbed, delivered to the ice-box, and carried out of the room.

A number of the leading commission merchants of Chicago have basement rooms led as above described, and their uniform testimony is that, with ice in the ice- xes, their rooms are dry; without it, they are damp.

It is not necessary that I should say much on the transportation of dairy prod- ts in its general aspects. This Association, one of the oldest of its class in the est, is familiar with the rapid development of the dairy interests in the West. It a general law that an increased demand precedes a *permanent* increase in produc- n. For several years past, during every day of every month in the year, the prod- t of the dairy has been carried in its best condition to every part of the civilized rld, thus increasing the demand and stimulating production to the enormous ex- t indicated by the figures given in the statements of your president. It is not too ch to say that refrigeration transportation is the foundation on which this fabric prosperity is built and sustained.

Builders of refrigerator cars are subject to such obvious limitations as to size, ight, ice capacity, and the severe conditions accompanying actual service, that it always a question whether the advantages of a contemplated mode of construction e less, equal to, or greater than its disadvantages. The builder is thus forced to oose by considering both elements. Most of the refrigerator cars now in use are cluded in two classes, one carrying its ice overhead, the other in the upper part of ch end of the car. In the latter class the location and compact structure of the ice- xes reduce to the lowest point the liability to accident and to disarrangement of the frigerator appliances. The Merchants' Despatch Dairy Line car belongs to the ss of end-icing cars. It has so proved its efficiency by actual service, that its mer- need not be urged by an argument and cannot be impeached by a theory.

Its ice-boxes are the same in construction and action as those already described suitable for creameries except that the ice water falls into pits below the floor, after ssing over wires and giving its coolness to the air of the car.

To illustrate its merits, it may be stated that it has no receptacle above the floor hich will hold a pint of water, consequently it is not liable to wet down its freight the deranged action of an overhead water or ice receptacle which may be caused by e clogging of waste pipes or by leaks resulting from constant and severe service.

The Dairy Line car has no hidden secret places. The car inspector sees every rt of its refrigerating parts and can easily determine when, by the wear and tear of rvice, it passes the point of safety for its freight.

It may be fairly claimed that defective action is less likely to occur in the end- ng car, and causes less damage when it does happen, than in the other mode of con- ruction. These are strong points in favor of the end-icing cars, and it may be added at a few thousand of them have been in constant use several years, and the proprie- rs of some of them give to shippers a written guaranty that their car will deliver its eight in as good condition as it received it.

But however much may be said on general issues, or in the advocacy of special terests, it is probable that the average shipper has but one standard by which he sses judgment on the merits of refrigerator cars or transportation companies, and at is, the character of the service which he receives.

The Merchants Despatch Dairy Line accepts this test, pursues the even tenor of s way, perfecting its service at every possible point, and seeking, as occasion offers, diffuse such information as will enable shippers to co-operate with the company in curing the best results possible in a difficult business, the varying conditions of hich render perfection impossible.

At the conclusion of Mr. Dexter's remarks Mr. J. G. Lumbard was called upon d spoke substantially as follows:

Mr. President.—The scientific discussion of the matter of refrigeration involves d requires special knowledge and education, to which I make no pretense, but there e some underlying facts so plain as to be open to the common mind, and so plainly ritten "that he who runs may read."

The universal agent for the accomplishment of refrigeration is *ice*. There are, to sure, other chemical and mechanical contrivances for the purpose, but these are sually so expensive, complicated and withal so uncertain and unreliable as to render em inaccessible for the common purposes of refrigeration.

Since, then, it is upon ice we must depend for the preservation of perishable prop
erty, let us address ourselves to the characteristics of this agent, and learn how bes
and most economically to employ it.

Everybody knows that cold air is heavier than warm air. In short, cold and hea
are opposite terms, and cold air and hot air differ from each other not only in the mat
ter of temperature but are directly opposed in all their characteristics and habits
Hot air ascends, cold air descends. Hot air expands, cold air contracts, and so o
through all characteristics and properties are they opposed each to the other. An
when I have said that cold air *falls*, I have by necessary implication stated where th
ice should be located to best cool any given space or room.

Take, for illustration, this room. Where would you put the ice to quickest coo
this opera house ? Knowing as you do that air coming in contact with ice immediatel
falls, where is the best place for it ? Would you put it under the floor ? Would yo
put it back on this stage, and behind these scenes ? Would you pile it at the sides o
at the ends of the room ? If not, why not ? Why, *because* cold air *falls*, you know th
ice should be placed overhead, and nowhere else. It falls, as I have said, because i
is heavier than the surrounding atmosphere, and is carried down by gravitation, th
same as a stone or other heavy body, and this law of gravitation is forever acting, and
always direct and always perpendicularly. Everything moved by gravitation moves
directly toward the center of the earth, and cold air can no more descend in othe
than perpendicular line, than can an apple fall—to use an old illustration—from you
neighbor's orchard into your garden. The natural wish of the economical heart fo
such a performance will never be realized, whether to slake a thirst for cool air, or t
satisfy longing for cheap apples. To overcome gravitation, we must employ othe
force than gravitation.

But the gentleman who preceded me, and whose earnestness testifies to his sin
cerity, claims that a block of ice placed anywhere in a room, will change the entir
atmosphere of that room, and that ice radiates *cold* as a stove radiates heat. Nov
this may be true to an extent, as a drop of water increases the volume of an ocean, bu
for purposes of refrigeration in the one case and navigation in the other, the state
ment is far from the truth. Heat is expansive, sometimes explosive. It is a live
active thing—always seeking means of escape. It propels storms and whirlwinds, i
stirring and contageous, and, when confined, infects the whole place. Ericsson ra
an engine with it. But cold is inert, inactive, and it is only by contact, *actual contact*
that its presence is ascertained. This room is supported by iron pillars—you may
experiment for yourselves, here and now. That pillar is colder than the surrounding
atmosphere. Place your hand near to it, and see if it throws off, or radiates, cold
Not at all. Now place your hand *upon* it. You see it is *cold*, and *contact* with it dis-
closes the fact. Is it so with that lighted stove, which has asserted itself and radiated
its heat until the two or three near benches are vacated !

These homely illustrations help to make clear the difference between heat and
cold, and to show how the one is self-asserting and aggressive and the other modest
and retiring. Since then the block of ice cannot be made available save by actua
contact, and since after such contact, the chilled air falls perpendicularly from it, is
it not clear that the ice should be placed immediately above the room to be cooled.

Until the earth shall be born again and all her laws by the new birth reversed, we
must get our baptism of cold air as we get our showers of rain—*from above*.

And now that we have properly placed our cooling fuel, and so as to get the full
blast of the icy flame, what else is necessary to a proper cooling room ? One thing
beside cold air is requisite. It must also be *dry*, for goods will perish in a damp at-
mosphere, however cold it may be. You all know that there is an amount of damp-
ness in the air, and that when warm air comes in contact with a cold surface, or with
a column of colder air, water is condensed. See your ice-pitcher in a wrrm day, and
note the drops condensed on the outside. Now to prevent this condensation you have
only to keep the warm and cold currents of air separated, and this you may readily
do by admitting the cold air from an aperture in one end or side of your room, at a
point lower than the aperture through which the hot air escapes. The cold air will
fall and displace the warmer air, and drive it to the highest points of your room—
where should be arranged an opening into your ice-box—when it strikes against the
body of the ice, is again chilled and again descends, thus establishing an endless chain
or circuit of cold and warm currents, and without their ever coming in contact with
condensation of water as a result. This is nature's perfect way of propelling nature's
perfect machine. And called a refrigerator.

This is the system employed by the Star Union Line, and stands opposed to that
employed by our competitors, who carry their ice in the ends instead of on the roof
of their cars.

On the general subject of transportation I will only say that the different lines
have employed every means to insure the safe and prompt handling of your products,
and are making as quick time as they can afford without largely increasing the cash
of your transportation. Speed costs money, and since you are a long way from the

rket and must compete with those near by, you cannot afford the expense of higher ed and shorter time. You must be content with present performances, or go to pensive express companies for their better time and higher rates.

REPORTS OF COMMITTEES.

We the Committee, appointed to nominate delegates to be sent to Washington in nuary next, in response to the call of the Commissioner of Agriculture, would re- ectfully suggest the names of R. P. McGlincy, Elgin, Ill.; C. C. Buell, Rock Falls, .; and H. B. Gurler, DeKalb, Ill.

W. R. Hostetter,
I. H. Wanzer,
Geo. Addy.

On motion, the foregoing report was adopted.

The Finance Committee reported that they had succeeded in raising $89. Report cepted.

The Chairman of the Committee on Statistics, appointed at the annual meeting 1881, being absent, there was no report. Secretary McGlincy made a verbal report what had come under his observation, which pertained only to the transactions on e Elgin Board of Trade, and in totals were as follows: Number of boxes of cheese ld in 1882, 280,700, aggregating 10,960,207 pounds; 5,650,915 pounds of butter, which ld for $2,752,231.56. The average price of cheese through the year was 7 5-6 cents, d of butter 33 1-12 cents. The highest price reached by cheese was 11½ cents, and e lowest 5 cents; the highest price for butter was 50 cents, and the lowest was 22 nts. The combined weight of the butter and cheese sold on the board during the ar is 16,611,122 pounds, or enough to fill 831 cars, allowing 20,000 pounds to a car, hich would make a train of over four miles in length.

As there had been no session of the Legislature since the last meeting of the As- ciation, the Legislative Committee had no report to make. On motion, the old mmittee was discharged and a new one appointed as follows: Dr. Joseph Tefft, R. McGlincy, C. C. Buell, W. R. Hostetter and D. A. Shoch.

SECRETARY'S REPORT.

The year which has just drawn to a close has been one of general prosperity to e dairy farmer, who has, in a measure, been rewarded for his toil by increased ices for his products, for which there has been a general demand running through e year.

Your Secretary has conducted an unusual amount of correspondence during the st year, in the interest of the Association, answering questions from all sections of e country—from Georgia and North Carolina, from Maine, Wisconsin, Minnesota, akota, Nebraska, and the Departments at Washington. Year by year the Associa- on becomes more prominent, among the agricultural classes, and those seeking formation on the particular branch we represent.

Your Secretary with as little delay as possible, after the adjournment of the last eeting, issued and placed in the hands of the members, the proceedings in pamphlet rm, which speak for themselves.

During the year there were frequent calls for copies by parties who hoped to learn mething beneficial to themselves from the knowledge and wisdom of this State As- tiation, representing as it does, the State which leads all others in the Union, save ne, in the production of dairy products. These reports were generally sent, although e applicants, as a rule, were negligent in sending even the stamps necessary to pre- ay the postage; and believing that the aim of this Association was to spread knowl- lge, your Secretary sent out the pamphlets so long as he had them.

Your Secretary has expended for postage, stationery, etc., during the year, $9.71, ith an itemized account accompanying this report. He has received and expended 2.00, leaving a balance due him from the Association of $7.46.

All of which is respectfully submitted.

R. P. McGlincy,
Secretary.

The report was received and adopted, and an order voted on the Treasurer for he amount due the Secretary.

The committee to whom was referred the matter of reporting upon the advisibility of having the Commissioner of Agriculture made a cabinet officer, submitt the following:

Resolved. That in a Democratic form of government, each industry ought to ho that place in the councils of the Nation corresponding to the proportion which it co tributes to the general prosperity, wealth and happiness of its citizens and the stab ity of its institutions, and as that of Agriculture, in this country especially, is t foundation of the prosperity of all other industries, giving employment to more th one-half of the laboring population and furnishing even a larger proportion than th of oui articles of export trade, therefore we believe that the head of the Departme of Agriculture should be made a cabinet officer with enlarged duties and increas facilities for doing the work which is required by the best interests of the who country.

D. N. Foster,
C. F. Dexter.

The foregoing was unanimously adopted.

The following, offered by D. N. Foster, was substituted for one almost simila offered by C. C. Buell:

Whereas, There now exists in several of the Eastern states a very contagio and fatal disease among cattle, known as "contagious pleuro-pneumonia," or "lu plague," and as there is imminent danger that this disease will soon be conveyed the herds of our Western states and the great open plains of the West, thus becomi permanently located among us and practically ineradicable, causing the loss of u told millions of wealth to the stock growers of this country, and

Whereas, Past experience has proved it to be impracticable for state legislatio to effectually and permanently eradicate this disease, therefore

Resolved, That we most earnestly and respectfully request tbe Congress of t United States to take such action as will promptly and effectually stamp out this mo insidious and fatal disease wherever it may be found to exist in this country, and al to prevent the reintroduction of this and all other contagious diseases among dome tic animals.

Resolved, That a committee be appointed to take charge of these resolutions a to use all honorable means to bring about the object sought.

D. N. Foster supported the foregoing in a brief speech, giving a reason for t faith that was in him.

Secretary McGlincy favored the adoption of the resolutions, stating that alrea the disease had appeared in the West, having been brought from the East by the i portation of calves from the infected districts of New York, to Nebraska, where qui a number of fatal cases had occurred.

In compliance with the last resolution, D. N. Foster, R. P. McGlincy, C. C. Bue and H. B. Gurler were appointed a committee to take charge of the resolutions.

The Committee on Nominations reported as follows: For President, Dr. Josep Tefft, of Elgin; Secretary, R. P. McGlincy, Elgin; Treasurer, J. F. Coe, of Sterlin Vice Presidents, C. C. Buell, Rock Falls; H. Hall, Sugar Grove; I. Boies, Genoa; W. Kingsley, Barrington; T. H. Baker, Davis Junction; J. H. Broomell, Aurora; H C. Edwards, Dundee.

Respectfully submitted,
C. H. Larkin,
H. B. Gurler,
C. C. Buell,
Committee.

On motion the report of the committee was accepted and adopted, and the officer declared elected.

The committee appointed to examine the dairy apparatus on exhibition, reporte as follows:

We find quite a large display of goods, among which we note: A churn exhibite by H. F. Batchellor & Son; the Sterling reversible iron harrow; the Western fee grinder; Perry's butter color; J. G. Cherry's can for raising cream, known as th Hawkeye can; also a can for drawing cream to the creamery, by the same exhibitor Wire's curd agitator and circular vat; the Belle City feed cutter; butter tubs by C M. Gates, Rock Falls, and the patent automatic cheese-maker. These all seem to b of use and doubtless the members are more or less familiar with them.

Thos. R. King,
J. B. Gilbert,
T. H. Baker,
Committee.

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The Secretary was instructed to incorporate in the proceedings resolutions of anks to the citizens and the railroad companies for courtesies shown and hospitali- es extended.

Resolved, That the thanks of this Association and the dairymen generally of the tate, are due and hereby tendered to the managers of the Chicago and Northwestern ailroad for the favors extended to us at this time. Mr. Marvin Hughitt and Mr. W. . Thrall, of that road, are deserving of especial mention for the courtesies shown s us in making arrangements for this session. They will ever be found ready to sist the industry we represent to the fullest extent of their ability.

Resolved, That the thanks of the Association are also tendered the Chicago, Bur- ngton and Quincy road for favors.

Resolved, That the hearty and earnest thanks of this Association are hereby ten- red the citizens of Sterling for their generous hospitality so freely extended to us hile we have been sojourners in their midst; and that we shall ever remember their ndness and cherish the manner in which they opened their doors and hearts and elcomed us to their homes.

H. P. Gurler extended an invitation to the Association to hold its tenth annual nvention at DeKalb. George Addy moved to accept the invitation, which motion evailed.

The next meeting will therefore be held at DeKalb, December 12 to 14, 1883.

On motion of George Addy, a vote of thanks was extended the President for the le and dignified manner in which he had presided over the session of the Associa- on.

The President returned his thanks to the members for the uniform courtesy they d shown him and for the aid rendered during the session.

There being no further business, the Association was declared adjourned, at 5 P. ., *sine die.*

It was announced that the citizens had provided an entertainment for Friday ening, to which all members of the Association were invited, and at 8 o'clock a odly number were present to listen to the following programme:

Song—Prof. Mountz. Male chorus.
Toast—The President of the Illinois Dairymen's Association and President of e first corporation west of the lakes for the making of creamery butter, Dr. Joseph efft, Elgin, Illinois.
The manager of the first creamery west of the lakes, I. H. Wanzer, Esq., Elgin, linois.
Song—Prof. Mountz. Male chorus.
The manufacturing interests of Sterling; A. A. Terrell, Esq., Sterling, Illinois.
The cow is gentle and submissive under the influences of the herd-boy's whistle nd the milkmaid's song; Messrs. Jules Lombard, Chicago, and A. Forrester, Wis- nsin.
The Elgin Board of Trade; R. P. McGlincy, Esq., Elgin.
The milk of human kindness—no adulteration here; Rev. H. A. Stote, Sterling.
Song—Misses Mackay, Mt. Carroll, Ill.
The Russian bear and American eagle—"Shake a paw;" Mr. Kuleshoff, Russia.
Lawyers as dairymen—C. L. Sheldon, Sterling.
Reminiscences of the butter trade in Pennsylvania—Hon T. A. Galt, Sterling.
Song—Mr. A. Forrester, Wisconsin.
The trade—a merit of representation at this convention; may their shadows never e less; Mr. George Addy, New York.
Song—Good night; Prof. Mountz. Male chorus.

The entertainment proved to be quite an enjoyable affair, and was fully appre- iated by the large audience assembled, and the members of the Association felt mply repaid for attending it. The singing of the Misses Mackay and Messrs. Lum- ard and Forrester was greeted with rapturous applause, and each were obliged to espond to well merited encores.

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